JANUARY 16, 1961

PAPER TRADE JOURNAL

Unusual Stainless Steel Press Section Gets Shipped Piggyback

Full Details, Many Photos About Continental Can's New Georgia Mill

Handling and Measuring Residue Chips at Publisher's Paper

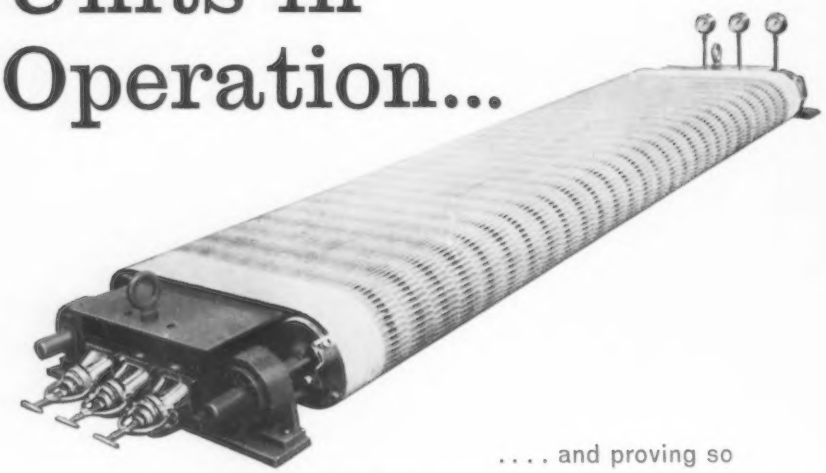
What Spare Parts to Have Around For That Centrifugal Pulp Screen

Contents of the Week, pages 4-5

See Page 34A

Editorial Dept.
University Microfilms, Inc.
313 N. First St.
Ann Arbor, Mich.

1,000 Rotabelt Suction Units in Operation...



FEATURES INCLUDE

Increase in wire life as great as 300% by the total elimination of friction between the wire and the flat suction boxes previously used. Reduction in couch drive (up to 30%) by eradicating the drag in the wire caused by flat suction boxes. Increase in production (a) By using a higher vacuum on the greater suction area of the "Rotabelt" than is possible with flat suction boxes, thereby producing as dry or dryer sheet at the increased machine speed. (b) By utilising for production down-time normally required for wire changing. (c) Because of less wet breaks due to the even dryness of the sheet across the machine and the increase in machine efficiency. Reduction in machine maintenance due to fewer wire changes and less maintenance on flat boxes and ancillary equipment. The "Rotabelt" requires negligible maintenance.

Send for leaflet to-day

W. P. EVANS & SON LIMITED

.... and proving so successful that many mills are placing repeat orders. Proof enough of the outstanding reliability, economy and all round versatility of this unit.

ROTABELT
REGD. TRADE MARK
suction unit

Papermakers Engineers
NASHUA, NEW HAMPSHIRE
Tel: Tuxedo 2-9081

CAMERON IMPERIAL WINDER serving with a high speed supercalender at the St. Francisville (La.) mill owned jointly by Crown Zellerbach and Time Inc.

*the finished roll of superb new quality!

It is sometimes expedient to purchase a winder as part of a mill or finishing room "package" installation. Even so, there is no reason to wind up with less than the superb quality of *The New Roll!* A Cameron integrated winding system, job-fitted by Cameron specialists, may be purchased for use with any paper machine of any make, or with any coating or calendering machine. *And that's the only way to get The New Roll!*

In the action photograph above a new Cameron Imperial winding system, integrated from unwind to rewind, (246" trim width, 72" rewind capacity) is running at speeds up to 5000 fpm* on 28 to 85 lb. coated book papers. Here are some of the features of this job-fitted Cameron system:

Roll control starts with a Cameron H3PMR continuous duty unwind brake responding to signals from a Cameron cam controlled adjustable automatic tension sensing system. Easy setups with tight starts and firmly set cores are assured by such features as the Cameron hydraulic riding roll lift, and hydraulic down-pressure control. Other features which contribute to superb roll quality are the riding roll driven at both ends for even torque distribution, differential speed rewind drums which play a star role in Cameron automatic roll density control, and the Cameron isolated gear box which drowns main drive vibration. Minimizing downtime and contributing to high productivity are such features as the Cameron automatic shaft injector, the Cameron hydraulic roll lowering table with Cameron automatic shaft puller and core loader, the air-operated Cameron Quick-set shear cut slitters, and the centralized control panel.

We invite you to visit the unique Cameron Research and Development Service at Dover, N. J. See the operation of your own job-fitted "pilot" system, perfectly integrated from unwind to rewind, and engineered by specialists to meet your precise requirements.

*Speed of Cameron Imperial is rated in excess of 8000 fpm depending upon machine width, number of cuts, tension, and characteristics of material.

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a team of specialists

54 YEARS devoted to the design and manufacture of slitting, roll winding, unwind and web control equipment.

Cameron Machine Company, Franklin Road, Dover, N. J.
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Brazil: Cameron Maquinas Ltda., Rua 24 de Maio, 104-5°, Sao Paulo, Brasil
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PAPER TRADE JOURNAL

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FEATURES OF THE WEEK

Plant 510 CCC's Latest, Presents Many Interesting Features

In the land made famous by the Eisenhower golf game—Augusta, Ga.,—a new $40 million facility possesses several innovations to please the palates of the modern mill aficionados —Harry Dyer **38**

Cantilevered Roll Design on Felt Washers Improves Operation **50**

Old Cylinder Machine Gets New Press Section at Caribbean Paperboard **51**

Some Tips on the Maintenance of Centrifugal Pulp Screens

The changing of screen plates consumes the most maintenance time, says the author, but there are many other items which must be included in a weekly inspection. Also includes is a list of recommended spare parts.—Farrell B. Johnson **53**

How Publisher's Paper Handles and Measures Residue Chips

Here is an example of how a West Coast mill processes residue chips from both sawmills and plywood plants—J. S. Hensel **55**

SUBSCRIPTIONS →

Paper & Pulp Mills, Converters and their Personnel	1 yr.	2 yrs.	3 yrs.
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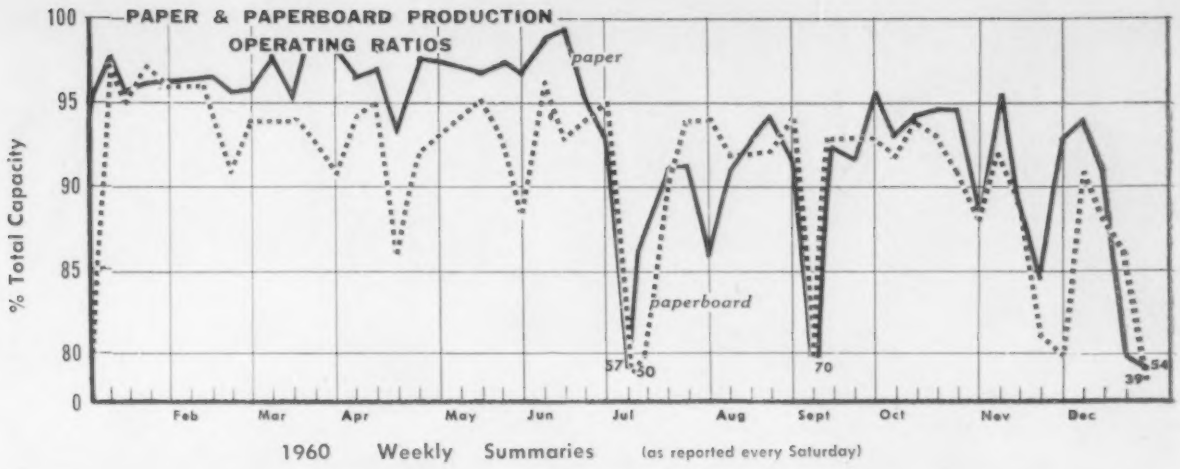

NEWS OF THE WEEK

Garden State Bldg. Nearly Closed In; Rich Appointed Gen. Mgr. . . . Mead-Scott Affiliate Completes First Step In $35,000,000 Financing. . . . I P and Waddington Form Food Packaging Companies for G. B. . . . Mosinee Mill Building Water Treatment Plant.

Strathmore Advances Executives. . . . C.-Z Men Win Promotions at Camas. . . . Ontario Paper Names Schmon Vice President. . . . K-C Appoints Senior Research Associate.

Trends *25*

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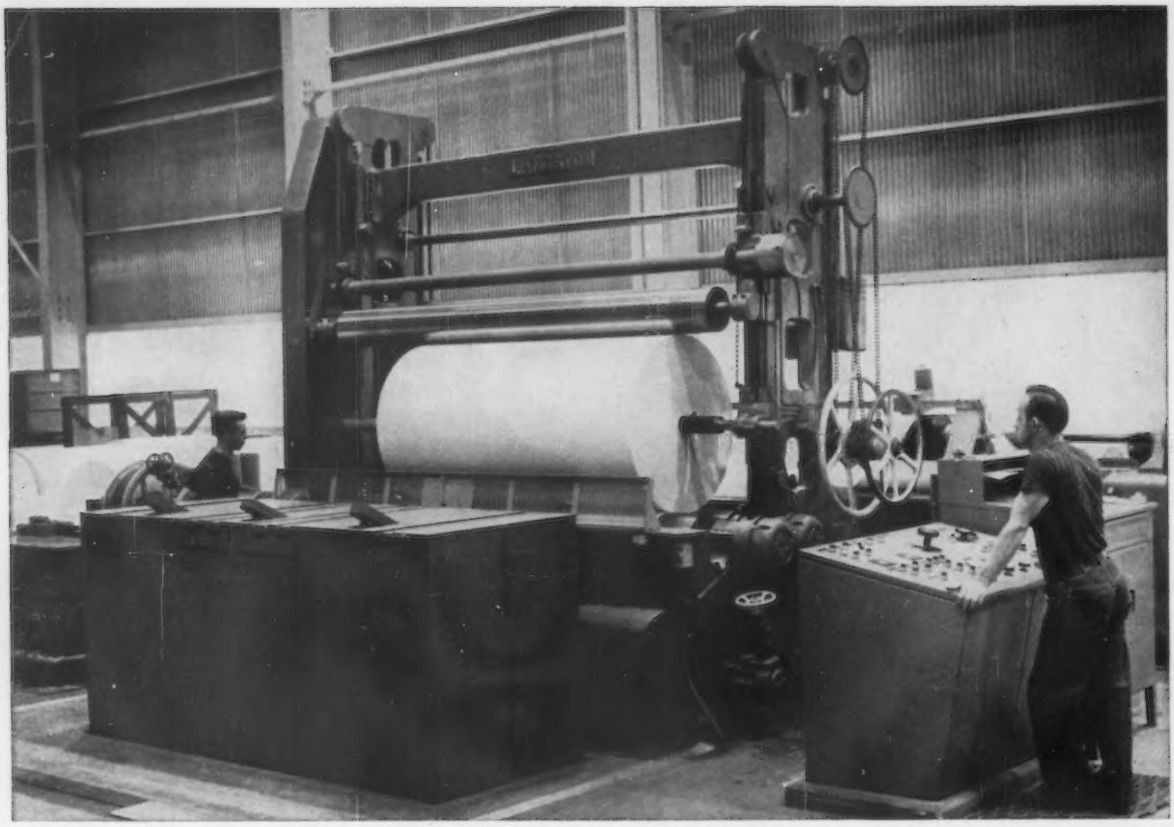
REMEMBER THESE DATES

January 19	Fifth Annual Pulp and Paper Conference. Western Michigan University, Kalamazoo, Michigan. Recent advances in Coating methods
January 24-27	Technical Section, CPPA Annual Meeting, Queen Elizabeth Hotel, Montreal, Canada
February 6-7	Flexographic Technical Association. Third Annual Meeting and Technical Forum, Hotel Roosevelt, New York
February 20-23	Paper Week in New York



One of the two 104-in. Langston Slitters and Winders in the Glatfelter mill completing rewind. Roll drop table in foreground is up, ready to receive roll when ejected by the winder, and chocks are in raised position to stop the roll. Note console incorporating all major indicators and controls.

Langston Slitters and Winders turn out tight, even rolls at Glatfelter Mill

Two 104-in. Langston Slitters and Winders have been working in the new mill of P. H. Glatfelter Co., Spring Grove, Pa., for more than a year. They have proved themselves in round the clock production on grades from fine papers to book.

One of the most important features, according to the company, is the constant tension unwind control on the Langston Shaftless Roll Stand, which keeps the tension constant throughout the winding operation. Perfect rolls can be turned out from 9 to 100-lb. stock in roll widths from 7½ to 104 in.

The equipment can be quickly loaded and lined up on the back stand and is designed for easy threadup and gang slitter setting. Hydraulic roll ejectors move the finished rolls quickly from the winding position to the roll drop. Other features include shearcut slitters to eliminate dust; many interlocked controls for extra safety; automatic edge guide control to allow precision trim rewinding of narrow and salvage rolls.

Find out how Langston Slitters and Rewinders can benefit you. Write SAMUEL M. LANGSTON Co., 6th & Jefferson Sts., Camden 4, N.J.

Langston Shaftless Unwind Stand eliminates back-breaking, time-consuming task of hoisting heavy shafts into place. Hydraulically operated arms reach out, pick up the roll, and raise it into running position—a 1-man, pushbutton operation.

SHEAR CUT CLEAN CUT

LANGSTON leadership...by design

Another Mount Vernon Dryer Felt Success Story . . .
A paper producer wanted for a bottom position, a felt which would stand 35 pounds of steam, run 600 feet per minute, give efficient drying, and yield a low cost per ton. Mount Vernon's WOODBERRY SUPER 887 was recommended. This felt ran a total of nine months giving a cost of 2.5 cents a ton. The special combination of cotton, asbestos and synthetic yarns in Mount Vernon's WOODBERRY SUPER 887, designed to increase efficiency at a great savings, chalked up another fine performance!
SUPER
887

EXCEPTIONAL POTENTIAL FOR ECONOMY

WOODBERRY SUPER 887–Asbestos and Synthetic Reinforced Dryer Felt

This smooth-faced dryer felt of asbestos and synthetic fiber reinforcement has the ability to run in hot spots where full-faced asbestos felts are currently being used. Since WOODBERRY SUPER 887 is substantially lower in cost, this felt presents a great potential for saving, for producing paper at much less dryer felt cost per ton. Developed to serve a wide variety of paper-making applications, versatile, economical, WOODBERRY SUPER 887 has earned its standing of great popularity among leading paper producers.

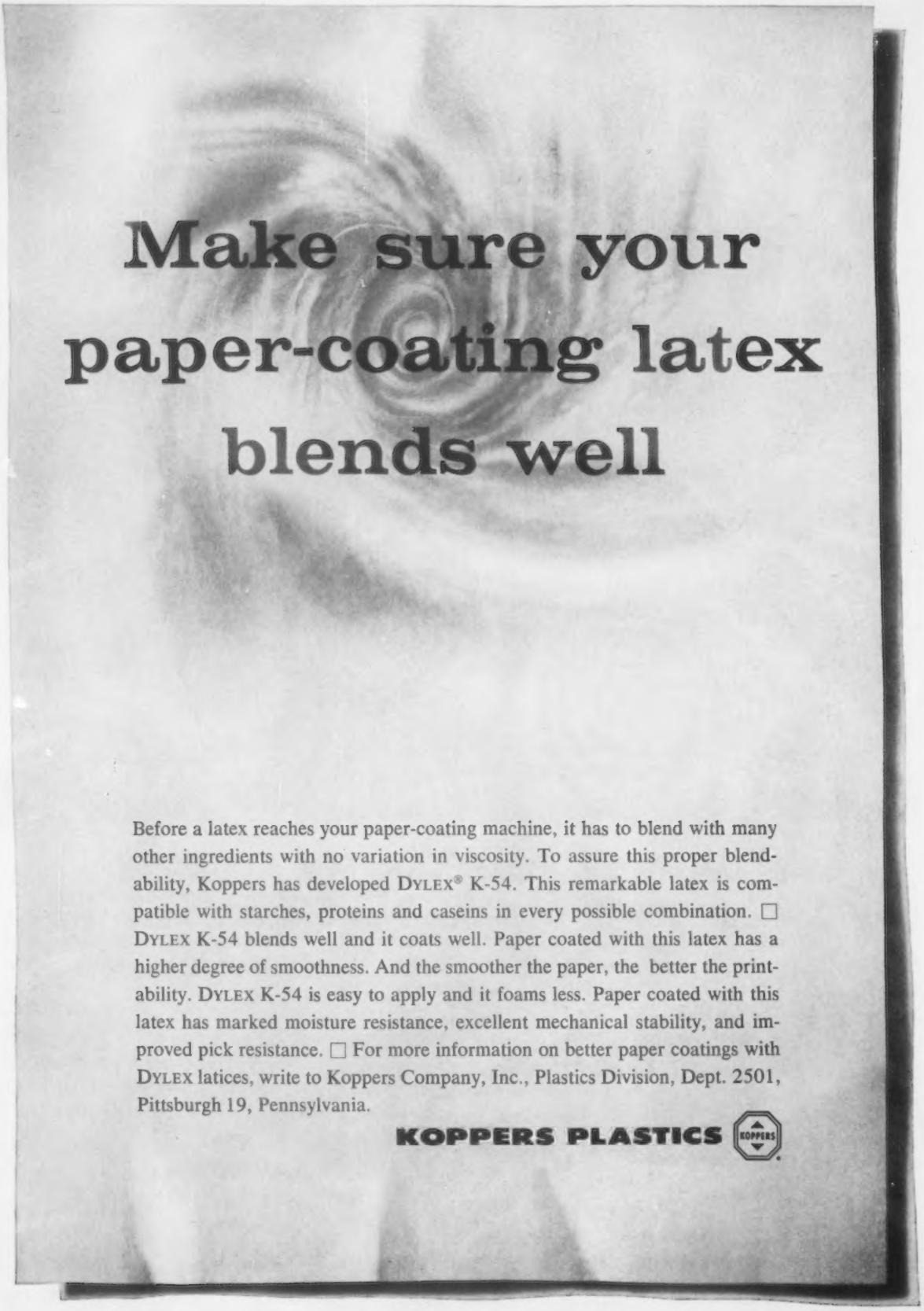
MOUNT VERNON DRYER FELT FAMILY—WOODBERRY SUPER 887 is just one of Mount Vernon's full "family" of scientifically designed dryer felts. There's an individual felt for virtually every paper machine position and every paper-making need.

UNIFORMITY Makes The Big Difference®

Mount Vernon Mills, inc.

A LEADER IN INDUSTRIAL TEXTILES

DRYER FELT DIVISION, 201 East Baltimore Street, Baltimore 2, Maryland • Telephone: SA 7-5845


Make sure your paper-coating latex blends well
Before a latex reaches your paper-coating machine, it has to blend with many other ingredients with no variation in viscosity. To assure this proper blendability, Koppers has developed DYLEX® K-54. This remarkable latex is compatible with starches, proteins and caseins in every possible combination. □ DYLEX K-54 blends well and it coats well. Paper coated with this latex has a higher degree of smoothness. And the smoother the paper, the better the printability. DYLEX K-54 is easy to apply and it foams less. Paper coated with this latex has marked moisture resistance, excellent mechanical stability, and improved pick resistance. □ For more information on better paper coatings with DYLEX latices, write to Koppers Company, Inc., Plastics Division, Dept. 2501, Pittsburgh 19, Pennsylvania.
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KOPPERS

LABORATORY FACILITIES AT BRANDON

"Here's where lower drying costs begin"

In this specially equipped laboratory, Brandon begins the custom-development of dryer felts that perform better and last longer. Here the search, for more desirable fibres, more efficient blends, greater tensile strength and more uniform porosity, never ceases. This research, plus actual mill experience, results in dryer felts that give cost-saving, trouble-free service you can depend on. Talk it over with your Brandon man soon.

BRANDON SALES, INC.
BRANWOOD STATION, GREENVILLE, S. C.

BRANDON DRYER FELTS

REPRESENTATIVES: *Northern and New England States:* ORTON CORP., FITCHBURG, MASS. *Midwestern States:* L. J. MEYERS, KALAMAZOO, MICH. *West Coast:* M. J. MAGUIRE, PORTLAND, ORE. *Southern States:* CLYDE H. WHITE, GREENVILLE, S. C.

Do you check these points When Buying **STAINLESS STEEL** *Valves?*

- ☐ **How good are the castings?**
- ☐ **How precise is the machining?**
- ☐ **How rigid are the inspection and testing?**
- ☐ **How sound is the design?**

Just as important as a suitable stainless steel alloy are these four checks on valve quality. For long, dependable performance, a valve should rate *perfect* on every one.

There's a very good reason why you can be sure Jenkins Stainless Steel Valves will do that, unvaryingly:

For almost a century Jenkins has specialized in making valves. And making them to one standard of quality . . . the highest. Every operation and every worker is aimed at fulfilling that standard. The result is a product that can be backed by this 91-year-old assurance for valve users:

A Fair Offer

If you will put a Jenkins Valve, recommended for your particular service, on the worst place you can find . . . where you cannot keep other valves tight — and if it is not perfectly tight or it does not hold steam, oil, acids, water or other fluids longer than any other valve, you may return it and your money will be refunded.

Order these reliable Jenkins Valves from your local Jenkins Distributor. Ask him or write us for Stainless Steel Catalog No. 59SS. Jenkins Bros., 100 Park Avenue, New York 17.

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LOOK FOR THE JENKINS DIAMOND
VALVES
JENKINS SINCE 1864 Jenkins Bros

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puts paper through its paces for alkali users!

With our Princeton Research Center now in full operation, FMC is prepared to offer the paper industry better-than-ever assistance with processing problems.

Research staffs of all three divisions of FMC's Inorganic Chemicals Department now work as a team in one of the best-equipped paper laboratories outside of the paper industry. Here, these paper specialists duplicate in miniature all basic steps of paper manufacturing and evaluate results with a complete range of performance tests.

This exceptional extra service is available for the asking. Next time you have a problem call our nearest office.

CAUSTIC SODA—50% and 73% Liquid, Regular and Rayon Grades; Flake, Solid and Ground
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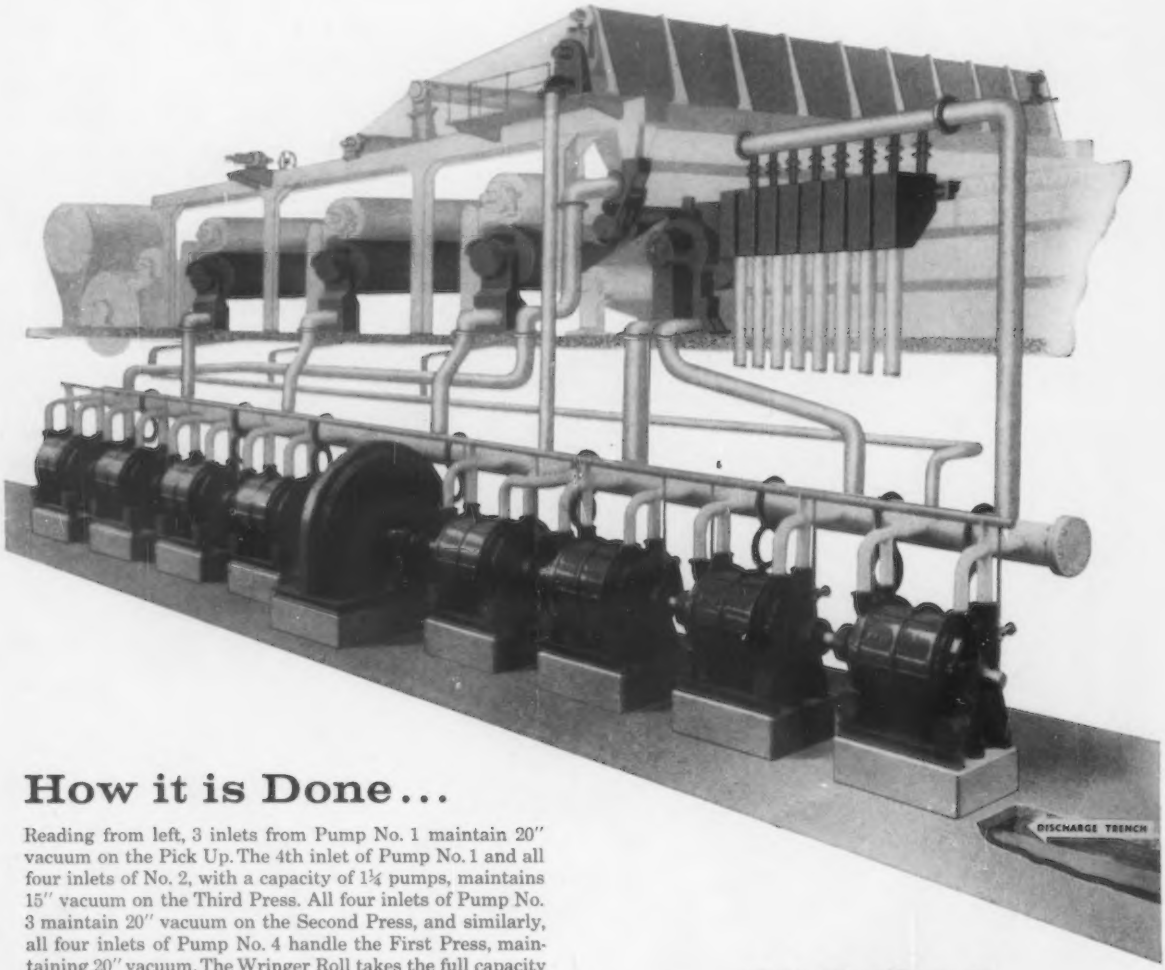
NOW-

Nash Vacuum Pumps of one size, driven if desired, by a single motor, will handle all of the varied vacuum and capacity requirements of an entire Paper Machine.

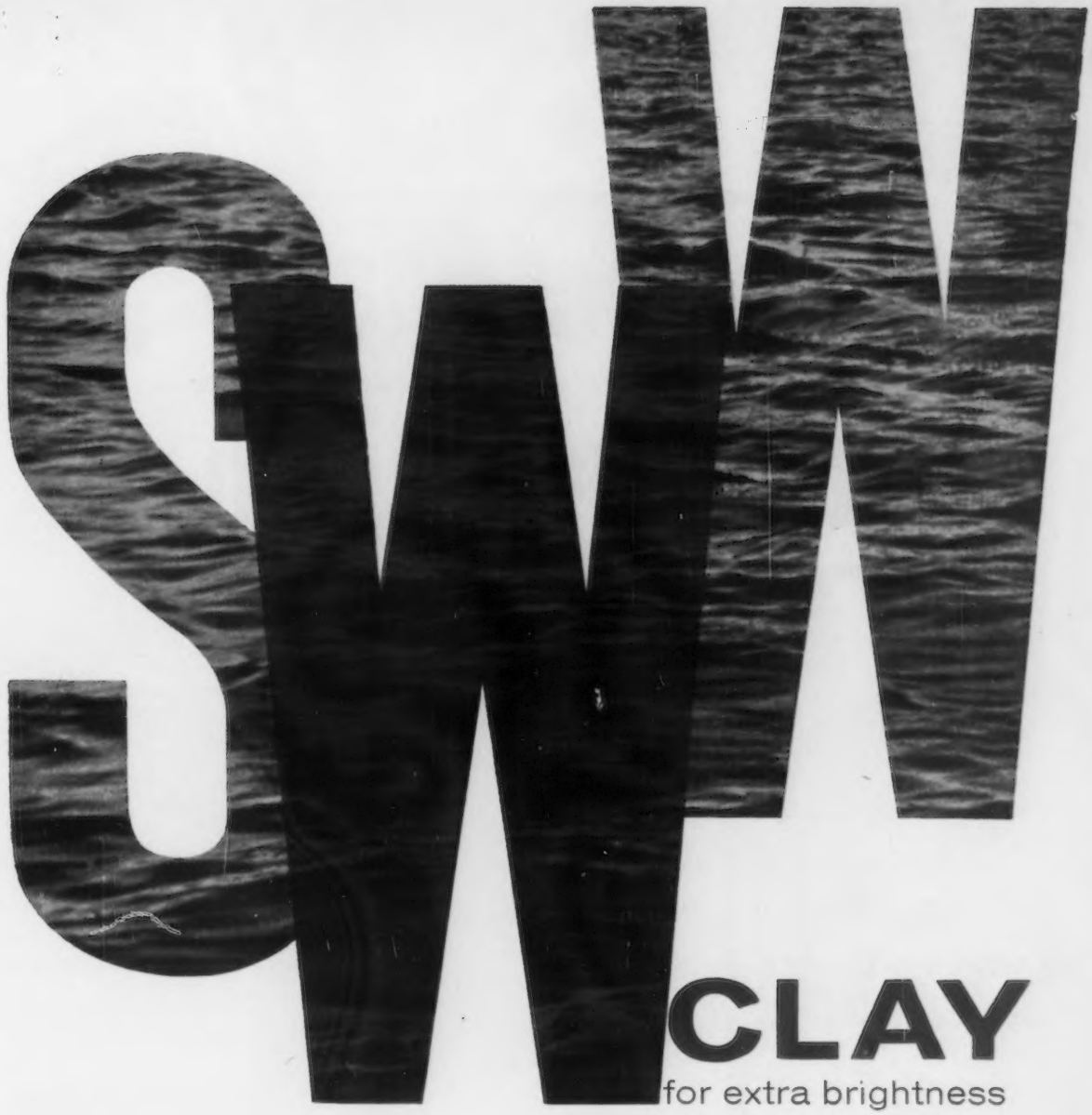
Designed by Nash especially for Paper Mill service, the new 5308 vacuum pump has four separate suction inlets, each of which functions independently of the others. This offers the machine operator great flexibility, since these may be used in any desired combination to produce the variety of capacities and vacuums required by the various functions of a paper machine. These may be varied at will. Great simplicity of operation, and economy of maintenance results. The enclosed discharge trench makes possible a comparatively silent installation and permits easy and economical water recovery.



How it is Done...

Reading from left, 3 inlets from Pump No. 1 maintain 20" vacuum on the Pick Up. The 4th inlet of Pump No. 1 and all four inlets of No. 2, with a capacity of 1¼ pumps, maintains 15" vacuum on the Third Press. All four inlets of Pump No. 3 maintain 20" vacuum on the Second Press, and similarly, all four inlets of Pump No. 4 handle the First Press, maintaining 20" vacuum. The Wringer Roll takes the full capacity of Pump No. 5, requiring 10" vacuum. The High Vacuum Couch Box takes a pump and a half, 4 inlets of Pump No. 6, and two inlets of Pump No. 7, maintaining 20" vacuum. The remaining two inlets of Pump No. 7 maintain 10" vacuum on the Low Vacuum Couch Box. Only one inlet of Pump No. 8 is required to handle the Felt Conditioners at 10" and the remaining three inlets of Pump No. 8 handily maintain 10" vacuum on the Wire Boxes.

NASH
ENGINEERING COMPANY
South Norwalk, Connecticut



CLAY

for extra brightness

If you're looking for more brightness in filler clays, many paper makers find that SWW is their answer. SWW's GE Brightness is 82-83.5 percent, but it is equivalent in all other physical properties to air-floated filler clays.

SWW is available in lump or pulverized form. It can be shipped bagged via boxcar or truck; bulk in hopper or box cars.

SWW is one of the complete range of filler and coating clays, air-floated and water washed, supplied by Huber to the paper and container industries.

Write for working samples.

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Mines and Plants: Huber, Ga., Graniteville and Langley, S. C.

Dryden=Quality

Quality=Dryden

Our customers tell us:

"Dryden is the new standard by which all pulps are compared."

At trade conventions, when the subject of "Quality" comes up, paper men always *start* with talk of Dryden.

As one customer recently told us, "Dryden is the new standard by which we compare all other pulps. When a new pulp comes along, our research people compare it with Dryden."

Our friend was referring to Dryden Bleached Sulphate Pulp, but the same can be said for Dryden's unbleached, electrical, and other specialty pulps.

Whether you want strength, or brightness, or cleanliness, or purity, Dryden pulps are unsurpassed.

Have you checked the "QUALITY=DRYDEN" equation in your own laboratories?

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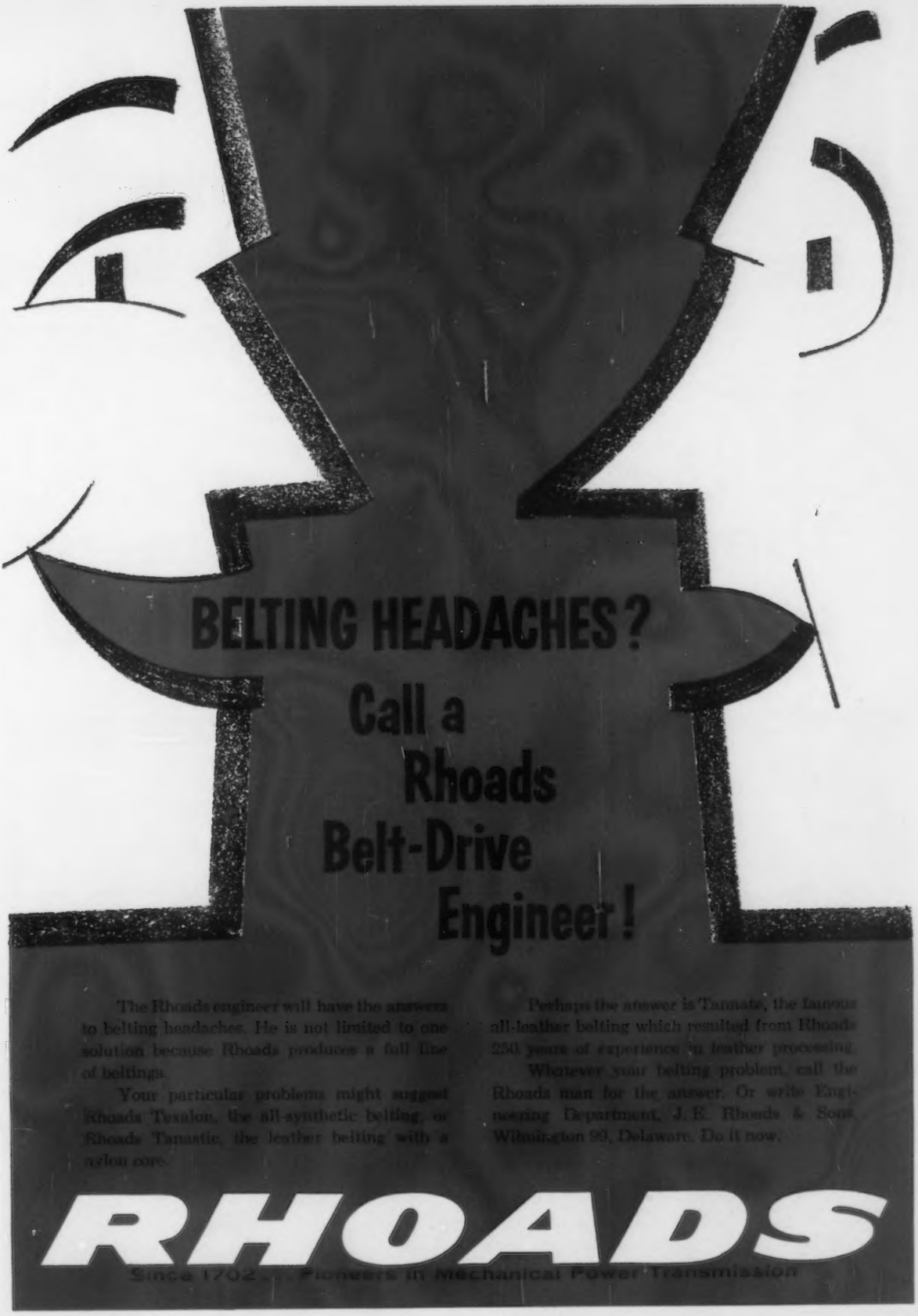
DRYDEN, ONTARIO, CANADA

SOLD BY: **Anglo Paper Products, Ltd.**
2055 Peel Street, Montreal 2, Quebec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Call a
Rhoads
Belt-Drive
Engineer!
The Rhoads engineer will have the answers to belting headaches. He is not limited to one solution because Rhoads produces a full line of beltings.
Your particular problems might suggest Rhoads Texalon, the all-synthetic belting, or Rhoads Tanastic, the leather belting with a nylon core.
Perhaps the answer is Tannate, the famous all-leather belting which resulted from Rhoads 250 years of experience in leather processing.
Whatever your belting problem, call the Rhoads man for the answer. Or write Engineering Department, J. E. Rhoads & Sons, Wilmington 99, Delaware. Do it now.
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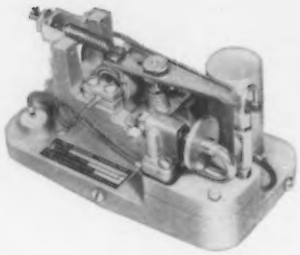
Since 1702 . . . Pioneers in Mechanical Power Transmission

FULSCOPE* Controller

—for more than 20 years the favorite for dependable performance, accuracy and adaptability to changing requirements. For automatic control of almost every phase of paper making.

Liquid Level Transmitter (229R)

—doesn't clog on services involving liquids and liquors with suspended solids which might clog a bubble system. Operates on force-balance principle. Simple, highly responsive.



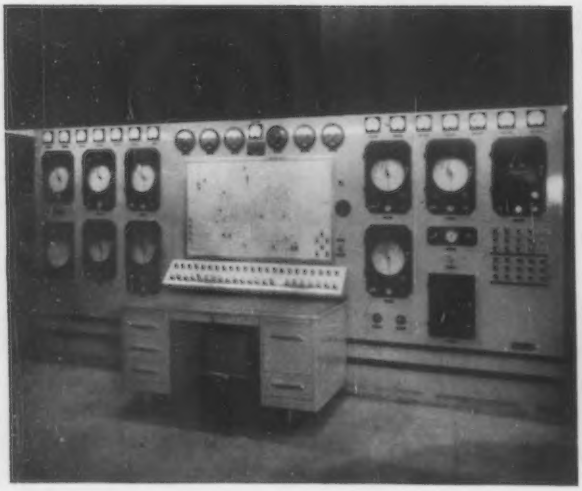
SENSAIRE* Temperature Transmitter

—provides low cost temperature measurement within limits of minus 30°F. to plus 1200°F. with simplified adjustments, excellent repeatability and fast response. Range spans of 50, 100, 200 and 400°F.

Fixed Range Differential Pressure Transmitter

—ideal for low-cost measurement of departmental consumption of steam, air and water as a basis for apportioning costs. Built for rough service and general outdoor mounting.

These *Taylor* Instruments cut costs . . . *Automatically*



Taylor FULSCOPE Controllers on the control panel for a Continuous Digester System.

Control panel for the wet end of a paper machine, regulating vacuum, pressure, pH, wire speed and level.

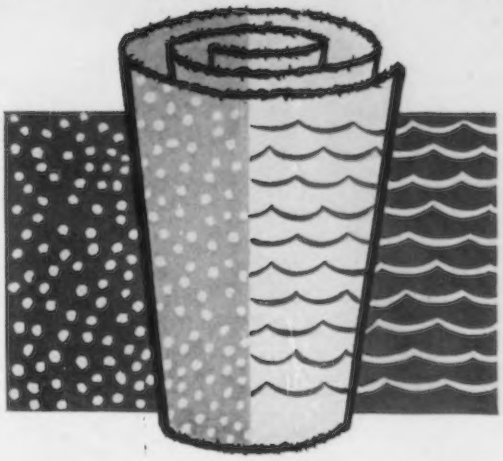
Whatever your processing control problems, you can always be sure of helpful advice when you rely on Taylor's years of experience in serving the paper industry. Call your local Taylor Field Engineer, or write Taylor Instrument Companies, Rochester, N. Y., or Toronto, Ontario.

*Reg. U.S. Pat. Off.

Taylor Instruments **MEAN ACCURACY FIRST**

NOW!

a better acid cleaner for felts...



Activol Beads

Reg. U.S. Pat. Off.

Paper mills, which formerly used Muriatic Acid for cleaning felts, report that changing to Activol Beads—the safer, more convenient, dry, bead form of acid—gives their felts extra weeks of life, keeps them remarkably softer and more open. Time and money are saved because the use of Activol 694 eliminates crushed sheet marks, reddening of paper and down time due to felt failure. Many mills now use Activol for continuous washing of felts, while paper is being made. Only a water rinse is needed to wash out the solution.

Outstanding benefits that Activol 694 Beads provide are:

- **Greater safety, greater convenience than bottled acid.**
- **Quicker, more thorough removal of lime, calcium, size, clay, resins, etc. from felts.**
- **More efficient, longer life span for felts.**
- **Less paper breakage, no reddening.**
- **Better sheet formation, no sticking of paper to felt.**
- **No pitting of cylinders. Increased life for cylinder wire; faster drainage, shorter drying time for paper.**
- **Detergent action is combined in an acid medium.**

Write, wire or call today for additional facts and figures on Activol Beads.

ELIMINATES DOWN TIME... CRUSHED SHEET MARKS

A Board Mill scouring felts 190′ x 11′ and 235′ x 12′, applies Activol 694 during the papermaking operation, pumping it through a hose line having a flat nozzle. Report—"Activol decidedly superior to Muriatic Acid because crushed sheet marks are entirely eliminated . . . no down time when Activol Beads are used."

ACTIVOL BEADS PROLONG FELT LIFE

This company obtained 9 to 12 weeks as a normal felt life cleaning with Muriatic Acid then following with a detergent cleaner. Activol was tested, hosing solution on to the felt, allowing felt to run about 30 minutes, then rinsing. "Felts were much cleaner than ever before and after running for 13 weeks were examined and found to be in excellent shape. Believe same felts can run considerably longer and attribute it all to the fact Activol did a much more thorough cleaning job."

ACTIVOL BEADS CLEAN PAPER MILL SCREENS ... REMOVE LIME DEPOSITS

This customer uses Activol Beads for cleaning screens on cylinders in the pulp washer and "Save-all" and for removing lime deposits from stainless steel screens. Activol solution plus steam is used by running the cylinders through the solution for eight hours. Activol Beads clean screens and felts *without attacking metal.*

ACTIVOL BEADS REDUCE DOWN TIME ... CLEAN DISCOLORED FELTS

This high grade paper mill manufactures a number of types of colored paper. Every time they change from one color to another, 1½ to 2 hours down time is required to clean the felt and chest on the machine. Previous color must be completely removed from felt. "Activol Beads do such a thorough job on the felts, down time has been reduced 50%, and there is practically no paper waste in changing colors."

HARRY MILLER CORP. HAMICO 4th & BRISTOL STREETS PHILADELPHIA 40, PA.

Manufacturers of:
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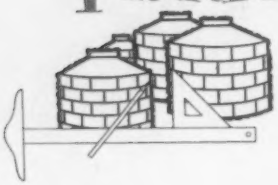
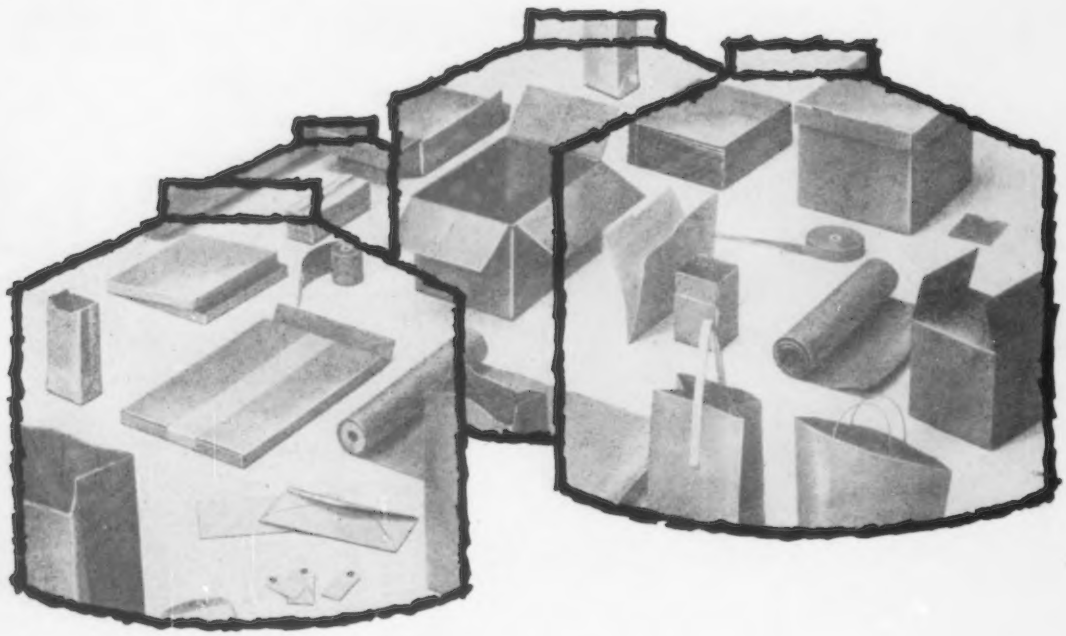
WEST END

advance planning OF ENLARGED SALT CAKE STORAGE ANTICIPATES INDUSTRY'S GROWING NEEDS





WEST END as a major supplier of highest quality natural salt cake programs expansion of its in-plant storage to meet ever-increasing requirements of industry. West End is constantly exploring new solutions to transportation, distribution and handling problems to assure its continuing position as a reliable and economical source.

Stauffer CHEMICALS

WEST END CHEMICAL COMPANY • DIVISION OF STAUFFER CHEMICAL COMPANY

636 CALIFORNIA STREET, SAN FRANCISCO, CALIFORNIA • PLANT: WESTEND, CALIFORNIA

BACHRACH

SERVICE:

In addition to providing papermakers with felts of the highest quality, we at Albany Felt Company recognize a second, most basic obligation to our customers . . . *service.*

But service can only be as good as management's intent. The quality of the service we have offered has been a special pride of our company for 65 years.

May I reaffirm to my numerous friends in the paper industry that the Albany Felt Company will continue its dedication to the firm principle that our service to papermakers shall be complete and unexcelled.

John C Standish

President and
Chairman of the Board of Directors

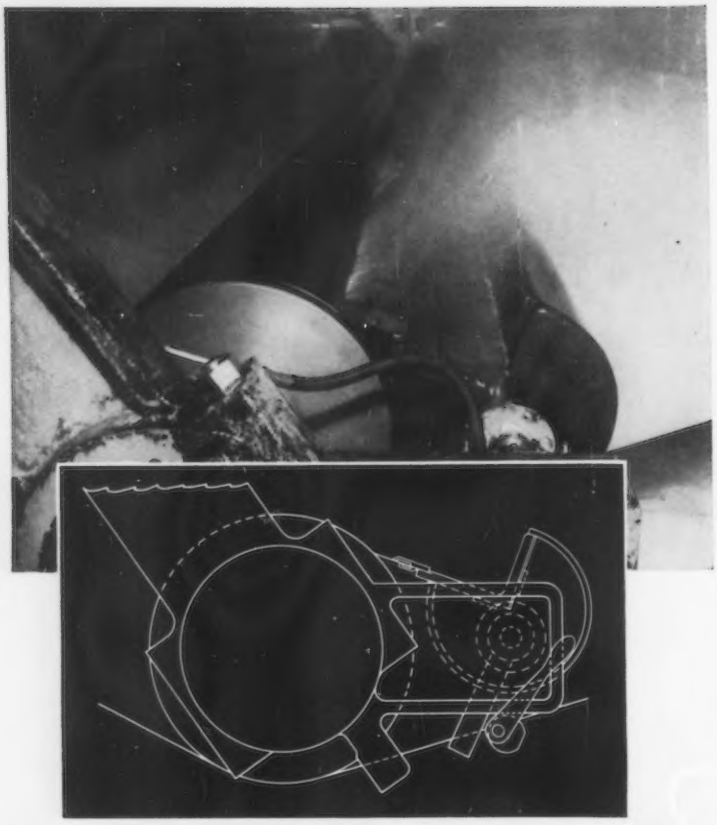
ALBANY FELT COMPANY
ALBANY, N.Y.

AF

Dedicated To Paper Industry Progress

N. Monmouth, Maine Hoosick Falls, N. Y. St. Stephen, S. C.
Cowansville, Quebec Cuautitlan, Mexico

TALK IT OVER WITH YOUR ALBANY FELT SALES ENGINEER



The World's Largest Paper Machine is Doctored by Lodding

PROPER DOCTORING of paper machine rolls results from long experience in specialization. For this there is no substitute. And, as doctors are precision tools, each installation must be custom-engineered and skillfully made. Proper doctoring doesn't just happen. It's planned.

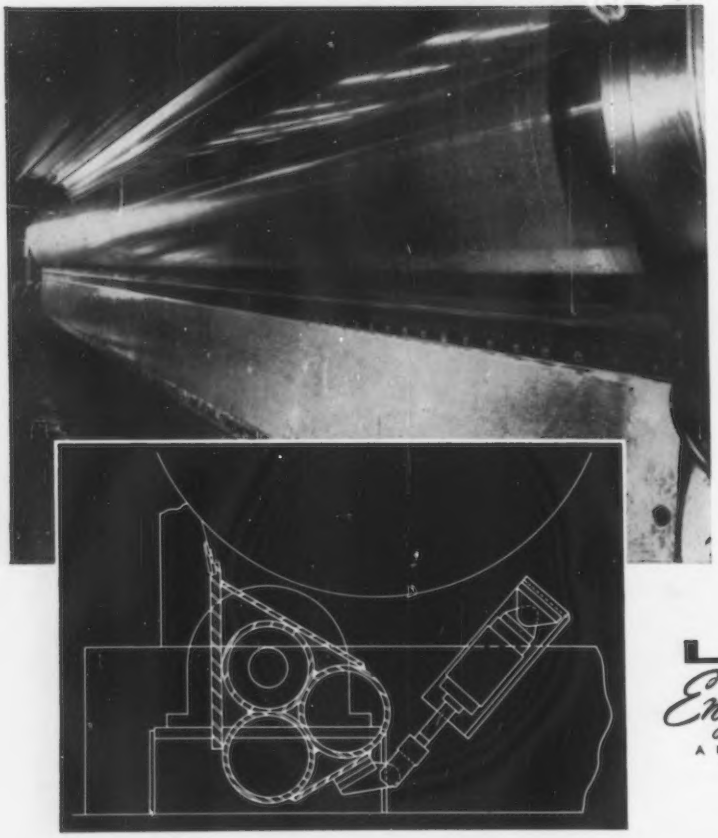
That is why most progressive mills and machine builders come to Lodding for their doctoring needs. That is why Lodding has yet to fail in any doctoring assignment.

When the Great Lakes Paper Company installed a 342-inch newsprint machine at Fort William, Ontario it was doctored by Lodding. This longer face width presented a challenging problem.

The Black-Clawson Company, builders of this machine, turned to Lodding for the solution. With the necessary design modifications, doctors were designed and built that today are providing hydraulically oscillating, uniform blade loading over a 342-inch span.

When you need good doctors for proper roll doctoring, you can rely on Lodding's specialized experience. Satisfaction is guaranteed.

Call, write, or wire for the benefits of this specialized technical service.



LODDING
Engineering Corporation
AUBURN, MASSACHUSETTS

UNITANE®

O-110

TITANIUM DIOXIDE

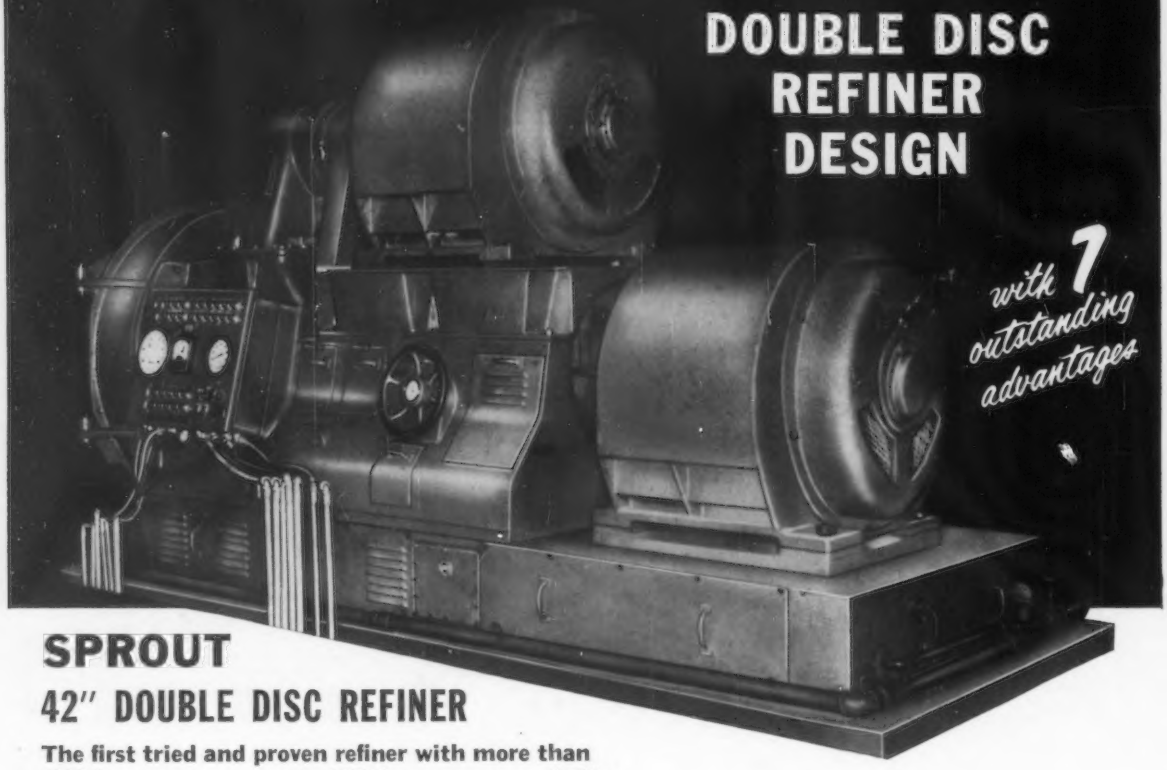
FOR GOOD WATER DISPERSION

Used extensively in the manufacture of paper and paper coatings, O-110 offers low binder absorption, is easily dispersible, and provides outstanding opacity with good whiteness. Ask your Cyanamid Pigments representative for complete information.

CYANAMID

AMERICAN CYANAMID COMPANY, Pigments Division
Branch Offices and Warehouses in Principal Cities
30 Rockefeller Plaza, New York 20, N. Y.

AN ENTIRELY NEW CONCEPT IN DOUBLE DISC REFINER DESIGN



with 7 outstanding advantages

SPROUT
42" DOUBLE DISC REFINER

The first tried and proven refiner with more than 1000 horsepower . . . up to 3000 horsepower available

1 UNIFORM MOTOR LOADING—There are no spokes through which the feed stock has to pass to reach the refining area, assuring efficient, fully effective use of the connected motor power.

2 STANDARD DIRECT COUPLED MOTORS—This means improved maintenance. The two motors are identical.

3 SHORT CONCENTRIC THRUST PATH—The refining thrust does not pass through the base. Any out-of-parallel condition of the disc faces due to frame deflection (apparent with conventional double disc refiners with integrally built motors) is eliminated.

4 HYDRAULIC PLATE POSITIONING—Disc refining pressures can be readily adjusted to the amount required for best quality and top production to suit the application.

5 PERFECT MACHINE ALIGNMENT—The refiner design permits line-boring of the housing for all rotating parts, insuring the most perfect alignment known to date.

6 AUTOMATIC REFINER ADJUSTMENT—Once the plate gap is set, hydraulic controls take over to maintain automatic control. The refiner controls may be installed in a central control console if desired.

7 EASY PLATE CHANGING—Like the famous single disc Sprout, this new double disc refiner is provided with a swingdoor which insures complete accessibility for plate changing.

Sprout-Waldron offers the best in double disc refining performance, designed especially for the pulp and paper industry. Unrestricted feed to the discs—identical to the method used with the Sprout single disc refiners—makes for full utilization of the connected horsepower. Standard direct coupled motors and rugged construction with horsepower to 3000 are available.

Write for Bulletin 231

SPROUT, WALDRON & CO., INC.

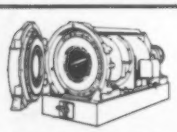
MUNCY, PENNSYLVANIA, U. S. A.

Refiners • Conveyors • Feeders • Screens • Mixers • Drainers • Fibre Presses • Stock Proportioners

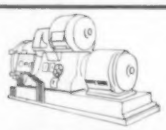
608

SW SINCE 1866

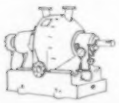
MORE SPROUT DISC REFINERS ARE SOLD THAN ANY OTHER MAKE



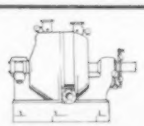
36-1 • REFINERS • 36-2

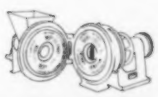


DOUBLE DISC REFINERS



20"-34" • PRESSURIZED REFINERS • 42"

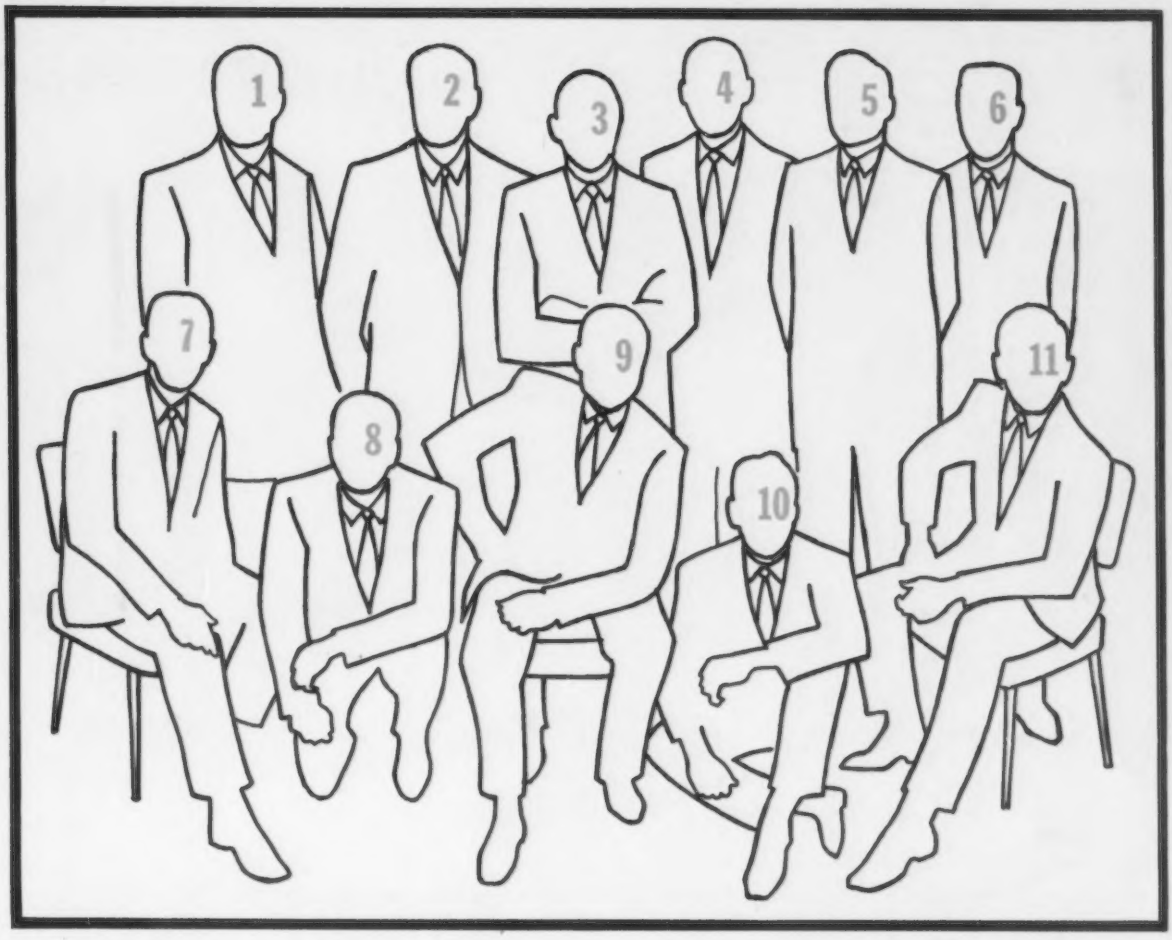




LABORATORY REFINERS

ALLIS-CHALMERS

A-1319



Group photo of 11 Allis-Chalmers paper industry specialists

too busy to pose

... but that's the way we work at Allis-Chalmers. Attention to customer service makes it hard to get these 11 specialists together for picture taking. Emphasis on giving prompt, practical solutions to the mechanical and electrical problems of our customers has given us a breadth of experience that no other manufacturer can offer! Whether you are looking for information on a single piece of equipment or on a complete process, contact your A-C representative or write the Industrial Systems Dept., **Allis-Chalmers,** Milwaukee 1, Wis.

1 **F. R. Forrest** Consulting Engineer

2 **H. K. Kingsbury** General Mill Pumps

3 **L. C. Vogel** Paper Stock Pumps

4 **H. A. Wright** Electrical Controls

5 **J. F. Fenske** AC Motor Applications

6 **C. B. White, Jr.** DC Motors and Variable Drive Systems

7 **J. E. Fink** Screening Applications

8 **E. C. Mertz** Lime Recovery Systems

9 **P. W. Clark** Systems Co-ordinator

10 **L. F. Hayne** Pulp and Paper Systems

11 **R. N. Wilson** Electrical Distribution Systems

at S. D. Warren Company's

Foxboro Stock increase

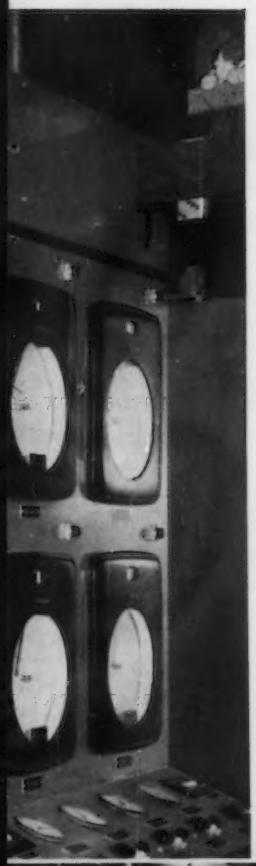
All four paper machines at Central Mill are equipped with Foxboro Stock Blending Systems. Control panels for Machines 3 and 4 are shown above. Machine superintendents report that because the Foxboro systems require less down time between runs, over-all production has been increased. Engineers and contractors for this program were Sumner Sollitt Company, Chicago.

Foxboro Magnetic Meters, 1/10 in., 3/16 in., and 1/2 in. diameter, control dye flows to mixing hoppers above each paper machine. Quick-disconnect hose permits using same meters to serve several dye distribution headers. Dye proportions are set at control panel.

PHOTOGRAPHY BY JOHN W. MOORE, JR. — PITTSBURGH

Central Mill

Blending Systems cut waste, production of first quality paper



batch beaters eliminated . . . stock, dyes, additives blended continuously, automatically

More first quality paper . . . batch beaters completely eliminated . . . waste slashed. These are just a few of the cost reductions Foxboro Stock Blending Systems have produced at S. D. Warren's Central Mill, Muskegon, Michigan.

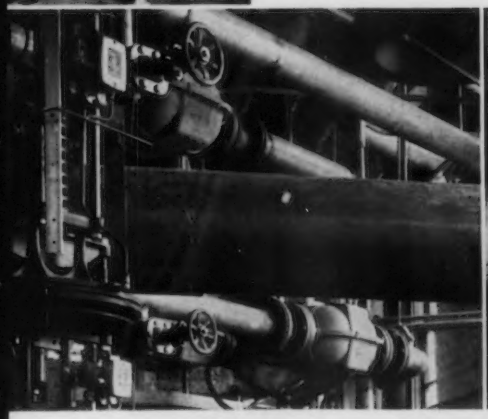
The unique Foxboro systems handle the whole job of stock proportioning. Machine tender sets desired stock, dye, and additive proportions on control panel for his machine — then walks away. Foxboro does the rest — blends pine, hardwood, broke, and purchased pulp; adds dyes and additives in proportions desired. System even adjusts for changes in machine demand while holding all proportions exactly constant. And it's all done continuously — automatically.

Foxboro Stock Blending Systems were installed on all four of Central Mill's Paper Machines as a major step in their continuing modernization program. Installation was handled by Foxboro during normal down-time periods so no production time would be lost.

Everyone at Central Mill — from top management down — is extremely enthusiastic about the performance of these Foxboro systems. You'll be enthusiastic, too, when you discover how quickly they'll pay for themselves in your mill — through better quality paper — through increased production. Ask your Foxboro Field Engineer for full details. The Foxboro Company, 231 Norfolk Street, Foxboro, Massachusetts.

FOXBORO

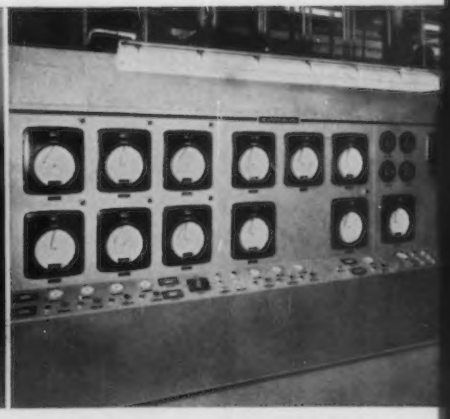
REG. U. S. PAT. OFF.



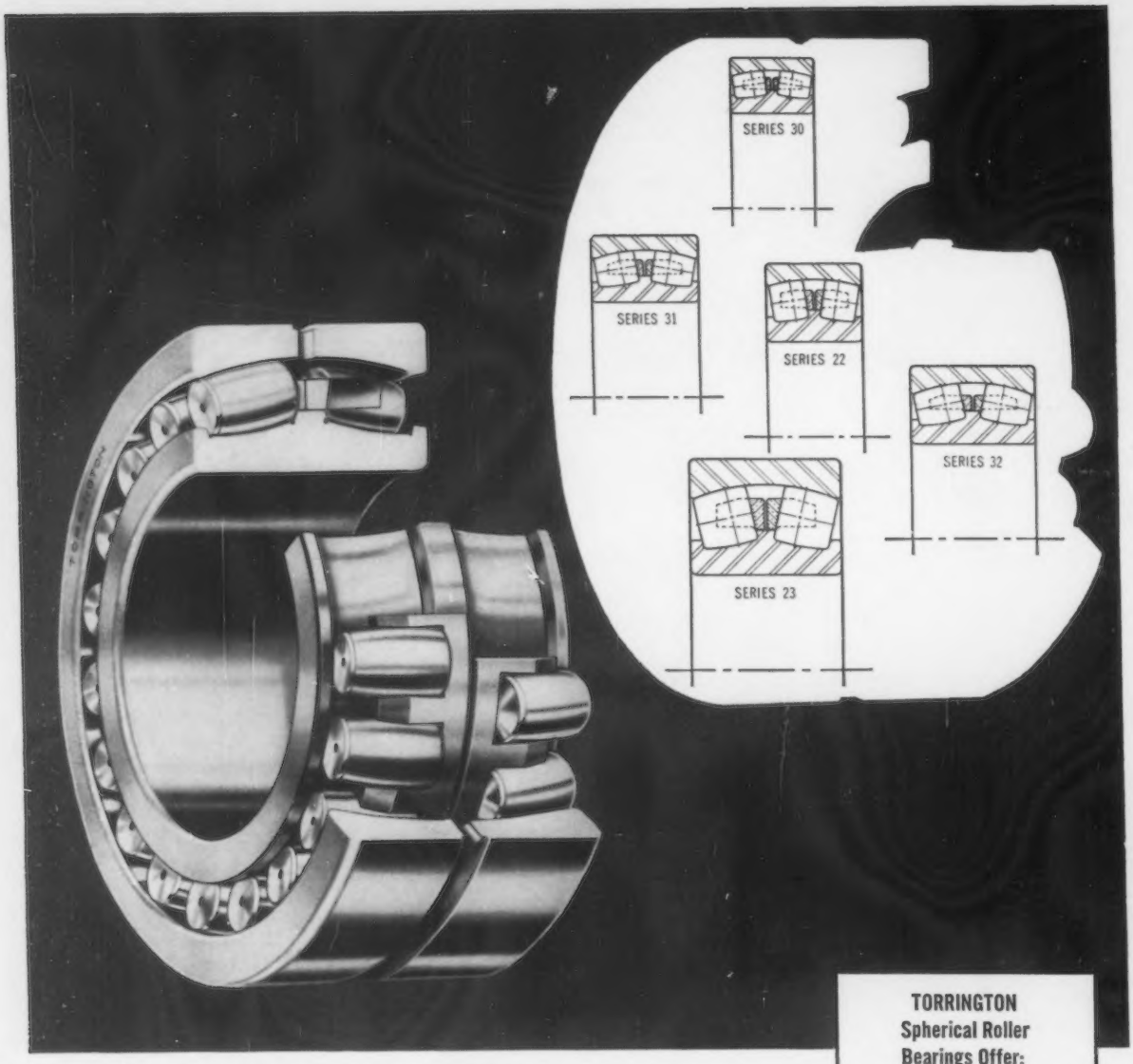
Foxboro Magnetic Meters, 3 and 4 in. diameter, control flow of stocks to blending chests — completely eliminate the need for batch beaters. Magnetic Flow Meters have no flow restriction of any type — cannot foul or plug up. Measurement is linear — accuracy guaranteed within ± 1%.

Foxboro d/p Cell* pressure transmitters are mounted right in the side of main feed-stock headers at the S D. Warren Mill. Precise operation of this entire blending system is assured by the accuracy and reliability of these sensitive pressure transmitters.

Reg. U.S. Pat. Off.



Foxboro instrument panel for #2 Machine gives operator complete control of the blending operation. On it are mounted flow-proportioning controllers for four stocks as well as for dyes and additives. Also, the percentage setting dials which proportion each stream to total system flow.



There's a Torrington Spherical Roller Bearing for your application

Bearings matched *exactly* to the job pay off in better performance, longer life, greater reliability. That's why it pays to specify carefully. And that's why it pays to choose Torrington Spherical Roller Bearings.

Whatever your space limitations or capacity requirements, the five series of Torrington Spherical Roller Bearings provide the right bearing for virtually every industrial application. You can design for straight bore or tapered bore with adapter. You can benefit from extra features such as lubrication groove and oil holes, or selected outside diameters.

Your use of Torrington Spherical Roller Bearings will assure exceptional operation and longer bearing life under the toughest conditions. They're made to Torrington's own uncompromising standards–the highest in the field of anti-friction engineering–by the manufacturer of every basic type of anti-friction bearing.

TORRINGTON Spherical Roller Bearings Offer:

- conformity of rollers to raceways
- integral center guide flange for stability
- positive roller guidance
- land-riding bronze cages
- maximum radial and thrust capacity
- controlled internal clearance
- electronically selected rollers
- inherent self-alignment
- even load distribution
- long, dependable service life

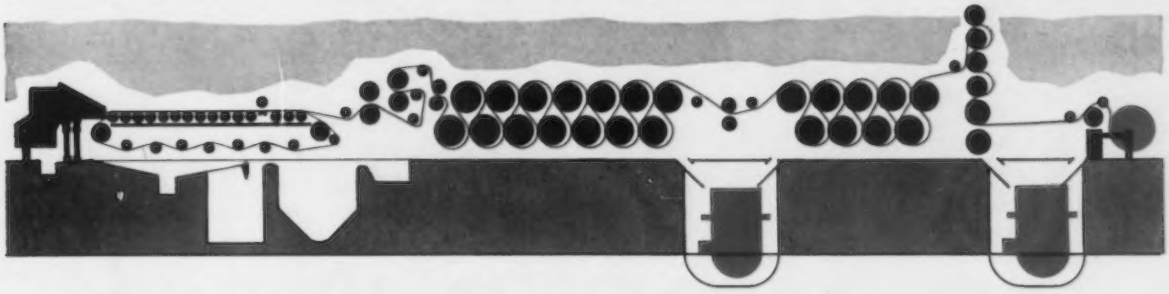
Send for new Torrington Spherical Roller Bearing Catalog #258

progress through precision **TORRINGTON BEARINGS**

THE TORRINGTON COMPANY South Bend 21, Indiana • Torrington, Conn.

Morden-ize Your Mill

FOR GREATER EFFICIENCY, INCREASED TONNAGE



MORDEN "SLUSH-MAKER" FOR RECLAIMING MACHINE BROKE

Continuous double-rotor models available for wider and higher tonnage paper machines.
MORDEN "SLUSH-MAKER" pulping units are adaptable to a variety of steel, tile, or concrete tanks.
All installations individually engineered to customer specifications.

Continuous Pulping Operation— through automatic controls, handling all weights and grades of paper and board, at full machine production rate. In most applications NO separate broke refining necessary.

Wet-Strength Repulping and Defibering—with the efficient rotor blade-attritioning ring action—defibers *all* grades of wet strength in minimum time. Pulping efficiency data available on request.

MORDEN "Slush-Makers" are used in furnish make-up, broke reclaiming and deinking plants—either continuous or batch operation.

Avail your mill of the facilities and services of Morden—specialists in refining and pulping. Morden consultants and laboratory serve the paper industry the world over.

Around the world the Morden name stands for quality and service in stock preparation equipment.

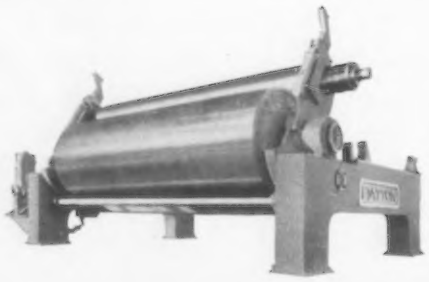
ASK FOR information on Morden's complete line of refiners, jordans and pulpers. Learn how they can benefit your operation.

MORDEN
MACHINES COMPANY

3420 S. W. Macadam Avenue • Portland, Oregon

UNITED STATES REPRESENTATIVES: South: Brandon Sales, Inc., Greenville, South Carolina
Midwest: Dan B. Chapman, Appleton, Wis. • Northeast: Orton Corporation, Fitchburg, Mass.

free horizontal track reel



HORIZONTAL TRACK REELS

PATTON

The money some mills pay out to nurse along old reels could well provide a "free" horizontal track reel now and then. The part that costs nothing is the increased production. Roll uniformity and quality improves. The entire machine may even be speeded up. Perhaps your mill's efficiency would improve if you proposed a replacement at this time.

When you shop for a new horizontal track reel, be sure to ask Patton for a proposal. Some of the cleanest and most modern horizontal track reels being installed today are from the well-engineered Patton line. They give a good account of themselves. You hear about them from progressive paper makers. And of course we invite you to ask the man who operates one.

The Patton Manufacturing Company, Springfield, Ohio, invites your inquiry for further information.

Trends

How Much New Capacity In What Grades?

A joint APPA-NPA capacity survey completed in December, 1960, shows the changes in capacity 1961, 1962 and 1963. Due to the closeness of the period of the survey to the current year the figures should be quite accurate. The changes for 1961 over 1960 are: Fine (+10%), Machine Cooated (+7%), Special Industrial (+7%), and Tissue (+5%) show greatest planned increases while uncoated groundwood printing papers show a decrease of 6%, which is undoubtedly due to conversion of paper machines to the manufacture of coated papers. Among paperboards, containerboard shows a substantial rise at 7%!!! In the building group only wet machine board shows a planned increase, up 9%.

Some Building Grades Show November Rise

Two grades of asphalt and tar building products showed increases in November over October as follows: asphalt roofing +21% and asphalt siding +11%. Insulated siding and asphalt board products were off 12% and 23% respectively. For the first ten months the group were off 3% to 26% compared with the same period in 1959.

Common Market Steps Up Duty Cuts

The "Inner Six" countries have recently reduced tariffs among themselves and "adjusted" tariffs against countries at large. They have reduced tariffs among themselves by 10 per cent, effective January 1, 1961, thus bringing to 30 per cent the total tariff cuts. In addition, the six countries agreed to decide by next June 30, whether it is possible to maintain the accelerated pace by a further 10 per cent *before* the end of this year. Should they so decide, by January 1, 1962, member countries would have slashed duties 50 per cent, since another 10 per cent is scheduled for January 1, 1962.

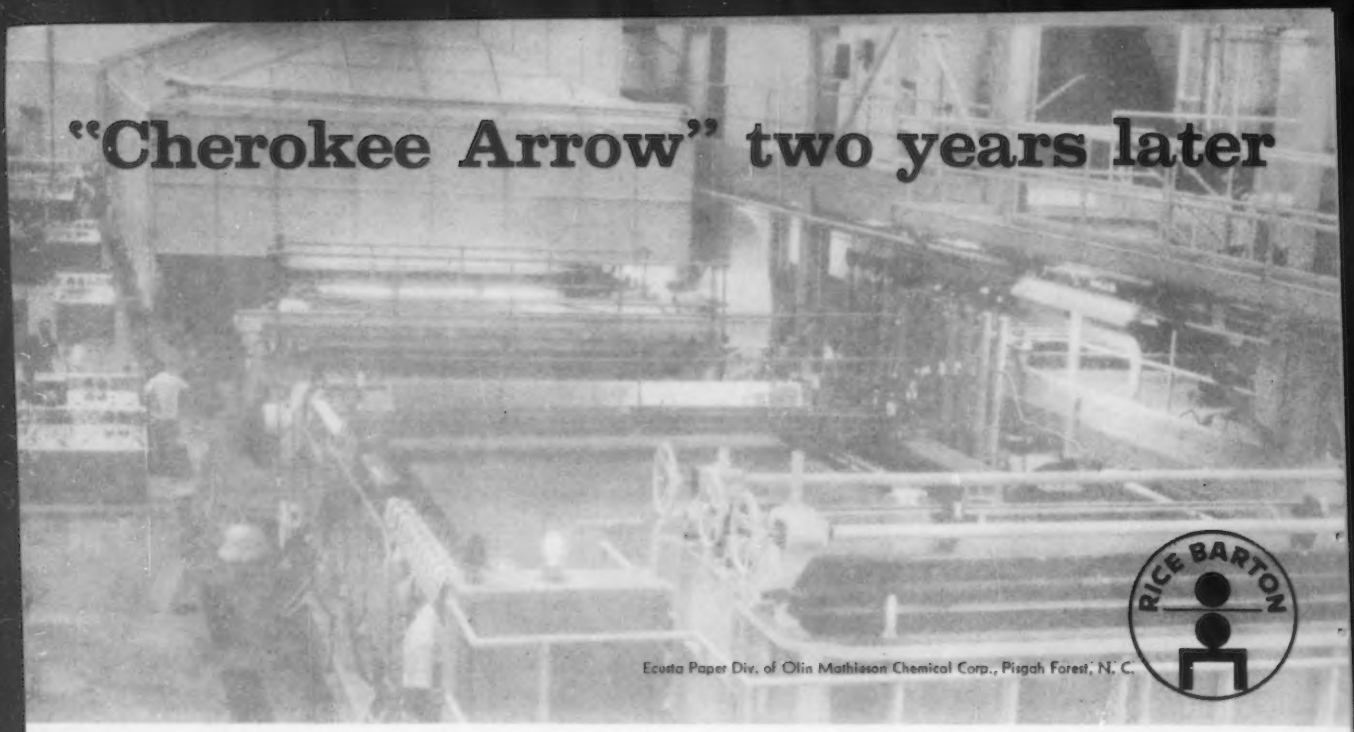
Waste Paper Exports On the Upswing

Rapid rise in pulp exports in 1960 has frequently been commented on, but overlooked has been an accompanying rise in waste paper exports. During 1960 export of waste paper was an estimated 20-25% over 1959.

On-Machine Coated Continues Vigorous Growth

On-machine coated paper hit a new record high production in 1960. Between 1945 and 1960 output of this grade has grown from 4 to 12% of total paper production and increased by 475%. Output remains concentrated in the northeast and north central regions.

"Cherokee Arrow" two years later



Ecusta Paper Div. of Olin Mathieson Chemical Corp., Pisgah Forest, N. C.

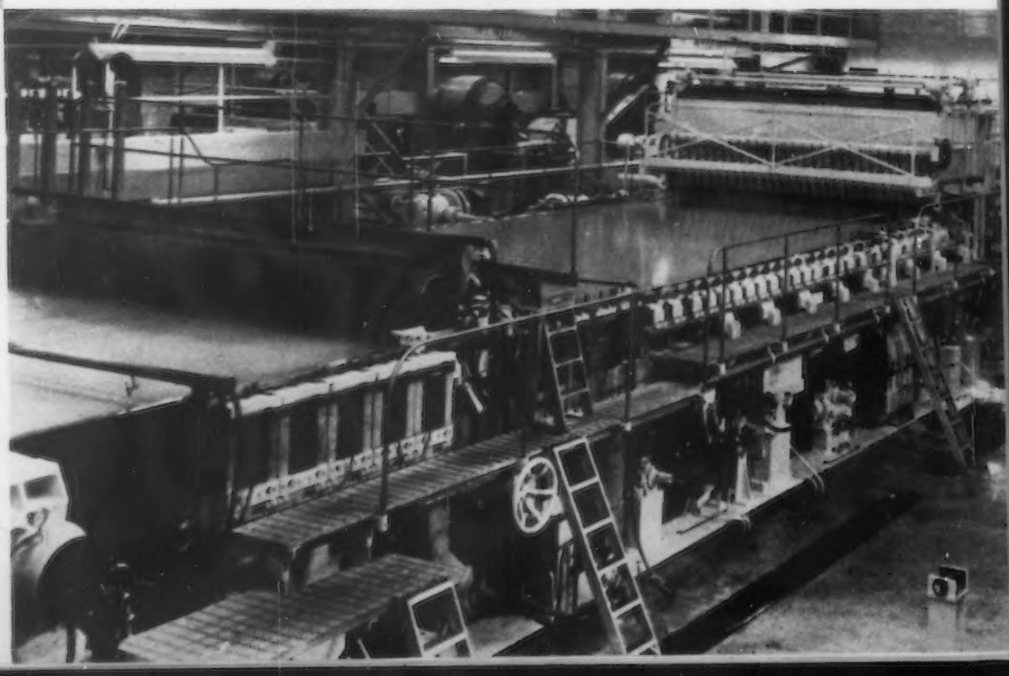
Surpassing even start-up enthusiasm as the biggest, fastest machine for light weight papers, Ecusta's No. 10 has dramatically stepped up both the mill's capacity and its versatility. It is producing up to 55 tons per day of quality-controlled papers in a great variety of weights from 15 to 40 lbs.

The "Cherokee Arrow" is evidence of sound engineering, precision manufacture and coordination with other equipment. When planning your next paper machine expansion or modernization, call us in to prove what *more* Rice Barton can do for you. *Progress is measured in Results not Claims.*

RICE BARTON Corporation, Worcester, Mass.

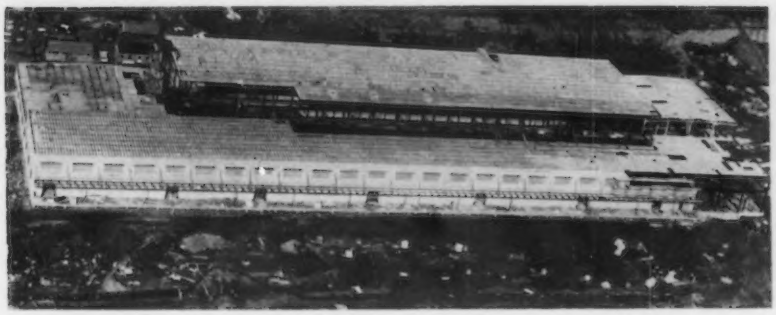
Fourdriniers • Press Sections • Dryer Sections • Calenders and Supercalenders • Reels • Winders • Head Boxes • Size Presses • Breaker Stacks
Differential Draw Control and Cone Pulley Drives • Pulping Equipment • High Velocity Air Dryers • Trailing Blade Coaters • Fibre-Flash Drying Systems

This performance-proven Rice Barton machine has a 182" removable fourdrinier, a 30' forming area. Running rate varies from 500 to 850 f.p.m. depending on the weight of the sheet being made. It is driven by a lineshaft through helical gears and differentials for ultimate in draw control. Three dryer sections have 30 high-pressure paper and 4 felt dryers with air-operated felt guides for controlling tension. Breaker stack with hydraulic top roll is located between first and second sections, horizontal size press between second and third. Moisture is controlled to correct for curl before sheet enters calender stacks and reel. Constant tension on winder is maintained by another differential drive.



PAPER TRADE JOURNAL

WEEK OF JANUARY 16, 1961



Rothesay Loses N.B. Site For Newsprint Mill

Saint John Shipbuilding & Dry Dock Co. appears to have emerged the victor in a corporate battle over 90 acres of mudflat in Saint John, N. B., harbor.

The loser is Sogemines-backed Rothesay Paper Co., which had hoped to build a $30-million newsprint mill on the Courtenay Bay site. Winner is owned by K. C. Irving of Irving Pulp and Paper Co.

Legislation vesting title to the disputed land in Saint John Shipbuilding, passed by the New Brunswick legislature, has been proclaimed by the lieutenant governor-in-council.

Rothesay is said to be having a quick appraisal made of another nearby site. Though it is much more costly to reclaim than the original one, the mill project might still proceed provided Rothesay is compensated for the difference in reclamation costs.

Rothesay is reported to have already spent over $400,000 in design and detail engineering on its proposed mill and loss of the site could be a major setback. Apart from Courtenay Bay, no suitable tidewater mill site is available in southern New Brunswick.

Garden State Bldg. Nearly Closed In; Rich Appointed Gen. Mgr.

J. H. Rich

Appointment of John H. Rich as general manager has been announced by Garden State Paper Co. Mr. Rich comes to Garden State from the New York offices of the Riegel Paper Corp.

Garden State announced six months ago its intention to build a 50,000-ton de-inked stock newsprint mill in Garfield, N. J. The mill building is now almost closed in, and should be in production in September. It is expected to use a furnish of more than 90 per cent waste newspapers.

Mr. Rich had been with Riegel Paper Corp. since 1950, beginning as assistant to Ward Harrison, vice president in charge of manufacturing. He was assigned to the coating and converting departments. In 1951 he became assistant to G. L. Bidwell, Jr., mill manager, and in 1956 was made manager of converting and coating.

Prior to his association with the Riegel Paper Corp., Mr. Rich had been vice president in charge of production of the Plastic Film Corp., Plainfield, Conn., and from 1936 to 1945 he had been assistant to the president of Newton Falls Paper Co. Mr. Rich had also worked for the Foster Paper Co. and the Brownville Board Co.

Mead-Scott Affiliate Completes First Step In $35,000,000 Financing

The first step in carrying out the financing program of Brunswick Pulp & Paper Co.'s $35,000,000 expansion has been completed. The company will continue to be coequally owned by Scott Paper Co. and The Mead Corp. Expansion is being financed by Mead and Scott each buying 100,000 additional shares of Brunswick capital stock with a par value of $10,000,000; banks agreeing to lend Brunswick $10,000,000; and an insurance company agreeing to lend $29,778,000 to Brunswick, part of which will refinance an existing debt. Mead paid $10,000,000 cash for the additional Brunswick common stock it has purchased.

Scott took up its subscription for the additional shares of Brunswick stock by selling to Brunswick 1,000,000 shares of capital stock of British Columbia Forest Products, Ltd., in return for 100,000 shares of Brunswick common and $5,530,000 in cash. British Columbia Forest Products owns and operates lumber mills and a large new bleached kraft pulp mill, located on Vancouver Island.

Brunswick's expansion program will increase its daily output of bleached kraft pulp from 550 tons to 1,100 tons per day.

A new pulp-drying machine, which will be a part of the expanded facilities, will make it possible for Brunswick to manufacture bleached board for the first time in its history.

IP and Waddington Form Food Packaging Companies for G. B.

Arrangements have been made for the formation of new jointly owned companies which will be concerned with the manufacture, sale and development of Pure-Pak and Satona paper containers for packaging milk, fruit juices and other products in the United Kingdom.

One of the new companies will be jointly owned by International Paper Co. and John Waddington, Ltd., of Leeds, England. The other company, to be known as Liquid Packaging, Ltd., will be jointly owned by the Waddington-International company and Metal Box Co. of London, England.

Liquid Packaging, Ltd., will handle the distribution and sale of packaging equipment for forming and filling Pure-Pak containers. Both the Waddington-International company and Metal Box, Ltd., will manufacture Pure-Pak milk containers under licenses granted by the Ex-Cell-O Corp. Santona containers which have long been produced for the packaging of a large variety of products in the United Kingdom by John Waddington, Ltd., will be produced by both the Waddington-International company and Metal Box, Ltd.

The new joint endeavor will bring together companies well known in the packaging field on both sides of the Atlantic Ocean. John Waddington, Ltd., is a prominent manufacturer of waxed containers in England. Metal Box, Ltd., is a well-known producer of packaging materials for the United Kingdom consumer market.

Mosinee Building Water Treatment Plant

Mosinee Paper Mills Co. is building a water treatment plant which will enable the firm to manufacture bleached papers of a higher degree of brightness than is now possible. The plant will have a capacity of approximately six million gallons per day. Its estimated cost is $350,000.

Mosinee gets its process water from the Wisconsin River. When the new system is completed and put into operation, this water will be screened and then pumped into a storage tank with a capacity of 125,000 gallons. This tank is in existence and is used as part of the mill's present water system. From the storage tank the water will be pumped into a clarifier. This will consist of a concrete basin 68 feet in diameter and 14 feet deep.

At the clarifier chemicals are added which cause the impurities to settle to the bottom of the basin. The clear water is pumped to a clear water storage tank, and from there to the beater room and to the paper machines. The pulp mill will continue to use screened raw water.

In addition to eliminating the restrictions on brightness, the new system will enable the Mosinee mill to manufacture an even greater variety of specialized industrial papers. It is expected to be put in operation in the fall of 1961.

Paper and Paperboard Production

The American Paper and Pulp Association reported the ratio of the United States paper production to mill capacity for the holiday week ending December 31, 1960, at 53.8 per cent, compared with 74.7 per cent, revised, for the preceding week. The ratio was 80.6 per cent for the corresponding week a year ago.

The National Paperboard Association reported the paperboard production ratio for the holiday week ending December 31, 1960, at 39 per cent, compared with 86 per cent for the preceding week and 44 per cent for the corresponding week a year ago.

(Detailed Statistics on page 64)

PCA Paperboard Division Sets Up New Sales Office

Packaging Corp. of America's paperboard division has announced the establishment of a new national sales office located in the company's corporate headquarters at 1632 Chicago Ave., Evanston, Ill.

J. C. Morris, senior vice president, paperboard division, said the new sales office would enable the company to provide improved and more direct services to national paperboard users.

He reported that J. S. Mulholland, vice president, sales, paperboard division, who recently joined Packaging Corp., would head the national sales office. Mr. Mulholland will coordinate all activities of Packaging Corp.'s new paperboard sales office with the company's already established eastern, central, and western regional offices. Regular sales contacts at these offices will not be affected by this move.

C. S. Moyer, formerly located at the company's Chicago sales offices at 111 W. Washington, and Wayne Hampton, formerly at the corrugated plant at 5950 W. 51st St., Chicago, also will operate from the new office.

In addition, Robert Syrene and Frank Witt will be attached to the new national paperboard sales office.

Packaging Corp. operates eight paperboard mills as a part of its national network of 49 plants.

Bowater Paper, Philips Form Joint Company

A new partnership is announced between the Bowater Paper Corp. (London) and the Philips Electric Lamps Co. of Eindhoven, Holland. The new joint subsidiary, to have its headquarters in Brussels, will be known as Bowaters-Philips S. A. Each company will have a 50 per cent interest.

The new company will acquire and finish the factory at present being built in the Ghent port area of Bowater Belgium S. A.

NRC to License Vacuum Metallized Paper Process

National Research Corp. has obtained the ownership of all patent and licensing rights, trade marks and equipment used in the production and sale of Vaculite metalized papers. This results from working out a joint agreement with The Champion Paper and Fibre Co. of Hamilton, Ohio, to terminate its partnership in the operation of Vaculite Corp., according to an announcement made by the NRC president, Hugh S. Ferguson. Champion is discontinuing its activity in the field.

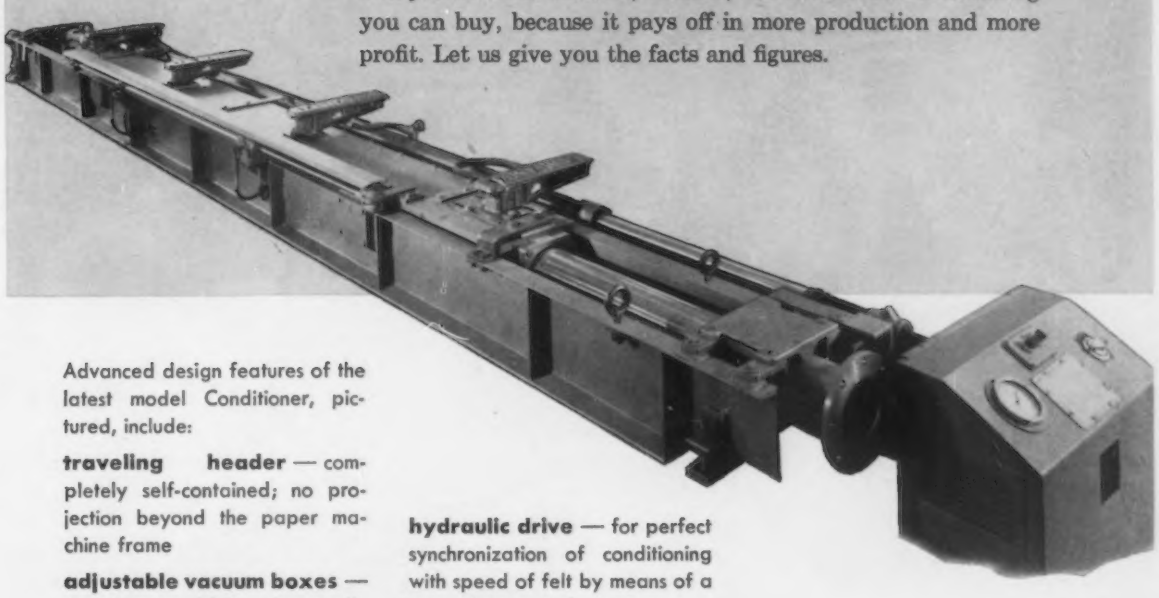
Vacuum metalized glassene used for ice cream bars and candy wrappers has been marketed by Vaculite for two years and will continue to be produced under the trade mark "Alulene." Metalized paper for labels has been marketed as "Aluprint."

NRC will make the vacuum metalizing process available widely to paper manufacturing and converting companies through licensing and the sale of equipment so as to develop and expand metalized paper markets for printing, packaging and other uses.

Is this VICKERY CONDITIONER "too good" for your felts?

Too *wide*, perhaps. Maybe one, two or three conditioning boxes will take care of the size and speed of press felt *you* happen to be running.

But you *do* need the best, modern, continuous felt conditioning you can buy, because it pays off in more production and more profit. Let us give you the facts and figures.

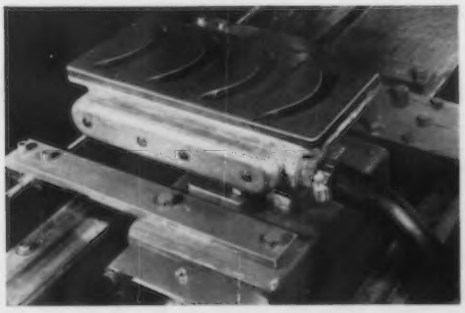


Advanced design features of the latest model Conditioner, pictured, include:

traveling header — completely self-contained; no projection beyond the paper machine frame

adjustable vacuum boxes — both for trim of felt and vertically

hydraulic drive — for perfect synchronization of conditioning with speed of felt by means of a convenient control panel.



Wet Felts Need Continuous Conditioning, Too. Here is a close-up of one of the special vacuum boxes employed on the Vickery Wet Felt Conditioner, which is likewise equipped with traveling header, hydraulic drive and speed control panel.

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PAPER PEOPLE

P. G. Volanakis

C. E. Benoit

Strathmore Advances Executives

Promotion of Peter G. Volanakis from manager of technical paper sales to administrative assistant to Henry D. Johnston, president, and of Charles E. Benoit from superintendent of the Woronoco mills to assistant to the vice president in charge of production has been announced by the Strathmore Paper Co.

Strathmore at the same time announced three other promotions.

Robert B. Clark, Jr., becomes general sales manager. Mr. Clark, who will report to Harry E. Riggs, vice president in charge of sales, will also continue in his present capacity as manager of printing paper sales.

Robert L. Fastie, who has been assistant manager of technical paper sales, becomes manager of technical paper sales, succeeding Mr. Volanakis.

John G. Gallup has been appointed manager of product planning and marketing research. Since February of 1960 Mr. Gallup has been assistant manager of the product development department.

Mr. Clark and Mr. Volanakis also were recently named to the Strathmore board of directors.

C-Z Men Win Promotions at Camas

Six promotions at Crown Zellerbach's Camas mill have been announced. Employes promoted were: Ed Barthelemy, Lawrence C. Blair, Leo Eggebraaten, James E. McCourt, Alfred Paris and Kenneth Lorenz.

Mr. Barthelemy, superintendent of paper machines-tissue, became acting general superintendent of paper production during the absence of Clarence Brown, who is on special assignment for the company.

Mr. Blair moved up from assistant paper mill superintendent-wrap to superintendent-wrap.

Messrs. Eggebraaten, McCourt and Paris, all paper machine foremen, became assistant paper mill superintendents-wrap. Mr. Lorenz, a machine tender, advances to machine room shift foreman.

Ontario Paper Names Schmon Vice President

Robert M. Schmon has been appointed vice president, development and planning, of Ontario Paper Co., Ltd., and associated Canadian companies.

K-C Appoints Senior Research Associate

Donald H. Grangaard, an authority in lignin chemistry, has been appointed senior research associate by Kimberly-Clark Corp.

Dr. Grangaard, a graduate of the University of North Dakota, and of Ohio State University, from which he received his master's and doctor's degrees, has been associated with Kimberly-Clark since 1939. For two years prior to his entering industrial research, he was research associate in cellulose chemistry at the Massachusetts Institute of Technology. He studied at the Institute of Paper Chemistry at Appleton, Wis., in 1953, under a sabbatical leave from Kimberly-Clark .

His appointment as senior research associate is the second such appointment made by Kimberly-Clark since establishment of the scientific position. Walter Roehr, an expert in the field of graphic arts, received the first in 1958.

Scholl Retires After Over 50 Years at Wausau

Frank Scholl, steam engineer at Wausau Paper Mills Co., Brokaw, Wis., has retired after more than 50 years of continuous service with this manufacturer of fine printing papers.

Mr Scholl's first job at Wausau Papers was as a steel worker on the erection of the new mill. Upon completion of the mill, he went to work there as a firemen's helper.

A short time later he became head fireman, then foreman of the boiler house and assumed the duties of Wausau's steam engineer, which was his position upon retirement on December 1, 1960.

Mosinee Announces Staff Changes

Mosinee Paper Mills Co. has announced the promotion of one of its men and the addition of two men to the staff. William W. Smith has been promoted to manager of the eastern sales district. Fred A. Haselow who recently joined the Mosinee staff has been made chief engineer, a new position. Alan R. Bowers has joined the research department staff.

Mr. Smith has been a sales representative for Mosinee in the eastern district since 1957. He previously had been a product manager for Lily Tulip Cup Corp. and a district manager for Scott Paper Co. He is a graduate of Swarthmore College.

Mosinee's eastern district headquarters are in Stamford, Conn., the eastern district includes Pittsburgh and all of the area to the east.

Mr. Haselow is a graduate of the University of Wisconsin. He had been chief engineer of Charmin Paper Mills at Green Bay.

Mr. Bowers will be an analytical chemist in the product development and technical service group at Mosinee. His background includes work as an analytical chemist at Badger Ordnance Works and at the Institute of Paper Chemistry. He is a graduate of Wisconsin State College.

Symmes Joins Chesapeake As Training Coordinator

Andrew H. Symmes, former director of safety and training for the West Virginia Pulp and Paper Co. at Charleston, S. C., has been engaged as training coordinator of The Chesapeake Corp. of Virginia in West Point.

Graham L. Evans, director of personnel and public relations, said Mr. Symmes will work with William E. Fish, personnel manager, in setting up a broadened training program and in coordinating present activities.

Muehlhausen To Become Bemis Personnel Director

E. F. Muehlhausen will become director of personnel for Bemis Bro. Bag Co. upon the retirement of F. V. Deaderick, vice president and director of personnel, on January 31.

Mr. Muehlhausen, who joined Bemis as an auditor in 1943, is a staff assistant in the company's personnel department headquarters in St. Louis. He served as office manager for the Bemis bag plant in Minneapolis from 1944 to 1948, and then as office manager for the company's packaging service unit, also in Minneapolis. He was transferred to the general personnel department in the St. Louis general offices in 1953.

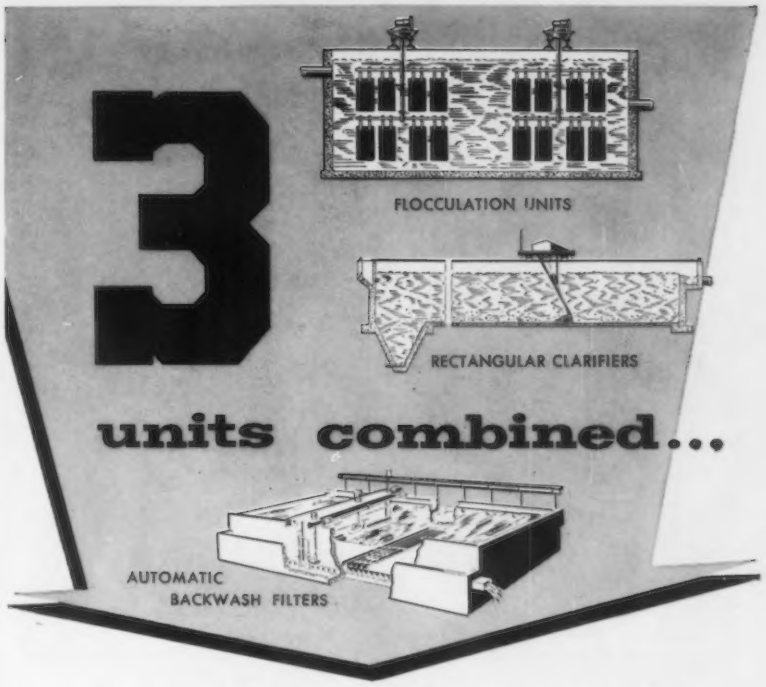
Bowater Promotes Three In Key Mill Positions

Three key promotions in the Bowaters Southern Paper Corp. mill and woods divisions have been announced.

W. J. Parson has been named production manager, newsprint, and John K. Dyer, production manager, pulp. Clarence Wilson has been appointed assistant treasurer of Hiwassee Land Co., the woods organization of Bowaters Southern Paper Corp.

All three appointees are residents of Cleveland, Tenn., and veteran Bowaters Southern employes. Mr. Parson, who was formerly general superintendent, newsprint, joined Bowaters in March 1954, as paper mill superintendent. Mr. Parson was previously associated with Southern Paperboard, Port Wentworth, Ga.; Union Bag-Camp Paper Corp., Savannah, Ga., and Southland Paper Mill, Lufkin, Tex.

Mr. Dyer was formerly general superintendent, pulp. He joined Bowaters in 1954 as assistant sulphate superintendent and became sulphate superintendent in 1956. He was previously with Gaylord Container



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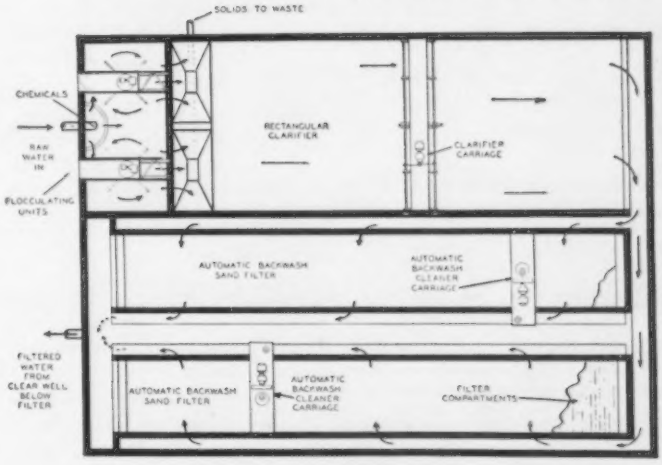

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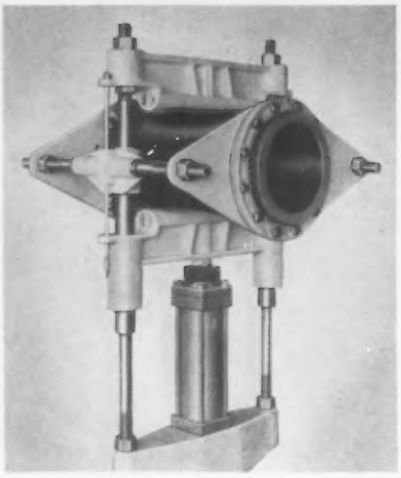

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- Hydraulic pump may be operated by electric motor or by air from normal plant supply system.
- Valves may be the same or different size.
- Valves in the system may be operated simultaneously or independently.
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- Valves are self-supporting and may be operated in any position from horizontal to vertical.
- Valves may be coordinated and interlocked with other plant equipment to automatically control tank levels, rate of flow, etc.
- Valves may be independently controlled for normal or rapid closure.
- Valves may be held fully open, fully closed, or at intermediate positions.
- Remote control to meet individual requirements.
- Controls may be included for automatic emergency operation.
- 3" to 14" I.D. sizes, with 50, 100, and 150 psi line pressure ratings.
- Temperatures to 200° F.

Advantages of Massco-Grigsby Pinch Valves

- Rubber, neoprene and special compounded rubber sleeves for *corrosive and abrasive pulps and liquids.*
- Patented "hinged" sleeve. Recesses serve as "hinges" during compression; reduce strain and permit tight closing.

- Unobstructed flow eliminates high friction loss and prevents contamination.

- Split flanges and patented Flex Seal ends assure perfect seal.
- Rugged, heavy duty construction for most severe service and long life.
- Cannot leak or stick.
- No working parts in contact with pulp or liquid; no packing glands.

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Corp., Bogalusa, La. He is a graduate of LSU.

Mr. Wilson, formerly woods accountant, joined Hiwassee in 1952. He is a graduate of the University of Arkansas.

Diamond National Names Crane a Vice President

Harold S. Crane, corporate director of manufacturing engineering for the past year at Diamond National Corp., has been elected vice president in charge of manufacturing engineering and development. Mr. Crane previously had production and engineering assignments in the Molded-Packaging Division, serving successively as works manager at the Palmer plant, division manager and divisional vice president in charge of engineering. He graduated from the Northeastern University engineering school in 1928.

It was also announced that Alfred H. Wilhelm has been elected a director and Henry A. Butterfield, corporate secretary.

Four Win Promotion At Oxford Paper

Four promotions in the engineering department of the Oxford Paper Co. have been announced.

Joseph G. Lessa, has been promoted from group leader, pulp mills, to project engineer, pulp mills; Noel C. Maillett from designer to group leader, general; Earle E. Cogburn from designer to group leader, pulp mills, and John R. Decker from junior engineer to group leader and statistician. All are from Rumford.

OBITUARIES

Marcy B. Newell, 54, mill process engineer, Ecusta Paper operations of the Packaging Division of Olin Mathieson Chemical Corp., Pisgah Forest, N. C., died in a Durham, N. C., hospital on January 2.

A native of Boulder, Colo., he was graduated from the University of Colorado in 1928 with a B.S. degree in chemical engineering. Mr. Newell was successively with the General Electric Co. at Pittsfield, Mass.; Bird & Son at Walpole, Mass.; Steven Paper Mill; and Peter J. Schweitzer Paper Co. Mr. Newell left Schweitzer in 1948 to form his own mining company in Montezuma, Colo. He joined Ecusta in 1949.

Pulp Paper and Board Mill Maintenance

Based on actual in-plant experience and prepared by well known men in the paper industry, this 126 page book brings you in easy to read language procedures for plant maintenance of kraft mills, semi-chemical mills, bleach plants, fourdrinier and cylinder machines, stock preparations equipment, and other machinery used in pulp and paper making. Price $2.50.

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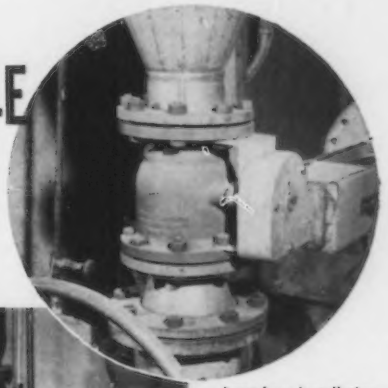

Jamesbury installation at Weyerhaeuser Longview Plant

Jamesbury installation at Mead Corporation Chillicothe Plant

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Greatest Range of Ball Valve Sizes and Materials Available

Jamesbury "Double-Seal" Ball Valves are available in Types 303, 316 and Alloy 20 Stainless Steels, Carbon Steel, Bronze, Ductile Iron, Aluminum and PVC. Other materials on special order.

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NEWS OF CONVERTERS

P. P. Wojtul

L. B. Pitts

Con Can Names Paper Product Div. Heads

Peter P. Wojtul, a vice president of Continental Can Co. and formerly general manager of the Fibre Drum & Corrugated Box Division, has been named general manager of the boxboard, folding carton and fibre drum operations of the company, according to Charles B. Stauffacher, executive vice president of the Robert Gair Paper Products Group. Mr. Wojtul has had over 33 years of service with Continental.

Also announced was the appointment of Lewis B. Pitts, formerly Northeast area manager of the Fibre Drum & Corrugated Box Division, as general manager of the newly created Corrugated Container Division. Mr. Pitts, with 25 years of service in the corrugated box industry, joined Continental as a result of the merger with Gair in 1956. He attended Tulane and Loyola universities.

La Monte West Coast Representatives Retire

Victor N. Savale, West Coast representative for the past 38 years for George La Monte & Son, Nutley, N. J., manufacturer of safety paper for checks, retired December 31. Mr. Savale joined the company in 1921 and formerly served in the Chicago office.

Mr. Savale is succeeded by Donald H. Geyer, who has been associated with George La Monte & Son as sales representative on the Pacific Coast for several years. Mr. Geyer will continue to operate from the office at 503 Market Street, San Francisco.

Harry H. Scharff, La Monte representative, also retired December 31 after 39 years with the company. Mr. Scharff joined La Monte in 1911. He has served as Pennsylvania and New York State representative for 38 years. He is succeeded by Roland Mulvey, who has been with La Monte for several years.

G.M.I.A. Plans 1961 Technical Section Seminar

Philip O. Deitsch, managing director of The Gummed Industries Ass'n., and Keith H. Williams of the Mid-States Gummed Paper Division of Minnesota Mining and Manufacturing Co., chairman of the association's Technical Section, have announced plans for the association's Fourth Annual Technical Section Seminar.

The 1961 GIA Technical Section Seminar will be held at the Hotel Roosevelt in New York City, convening at 9:00 A.M. on Thursday, February 23, 1961.

Interest at the seminar will center on a talk during the afternoon session by T. M. Lodahl of the Massachusetts Institute of Technology's Industrial Management School. Dr. Lodahl is nationally known as a psychologist specializing in industrial management and will address the group on the subject of "Organizing for Creative Activity."

Reeves Named Assistant VP, Nashua Corp.

Appointment of Ralph J. Reeves to the office of assistant vice president-corporate plans, by the board of directors of Nashua Corp. has been announced.

The promotion of Mr. Reeves who has been assistant to the executive vice president, was effective January 1.

Mr. Reeves joined Nashua Corp. as executive assistant in 1947 and has since served as superintendent of specialty printing division, assistant manager of manufacturing, and assistant to the executive vice president.

Kleen-Stik Plans to Be Nat'l Starch Subsidiary

The board of directors of Kleen-Stik Products, Inc., has agreed, subject to the approval of its stockholders, to transfer its business and name to Kleen-Stik Products, Inc., a wholly owned subsidiary of National Starch and Chemical Corp. in exchange for shares of National Starch common stock.

Kleen-Stik will operate as a separate corporation under its present management, and headquarters will be continued at its present location in Chicago.

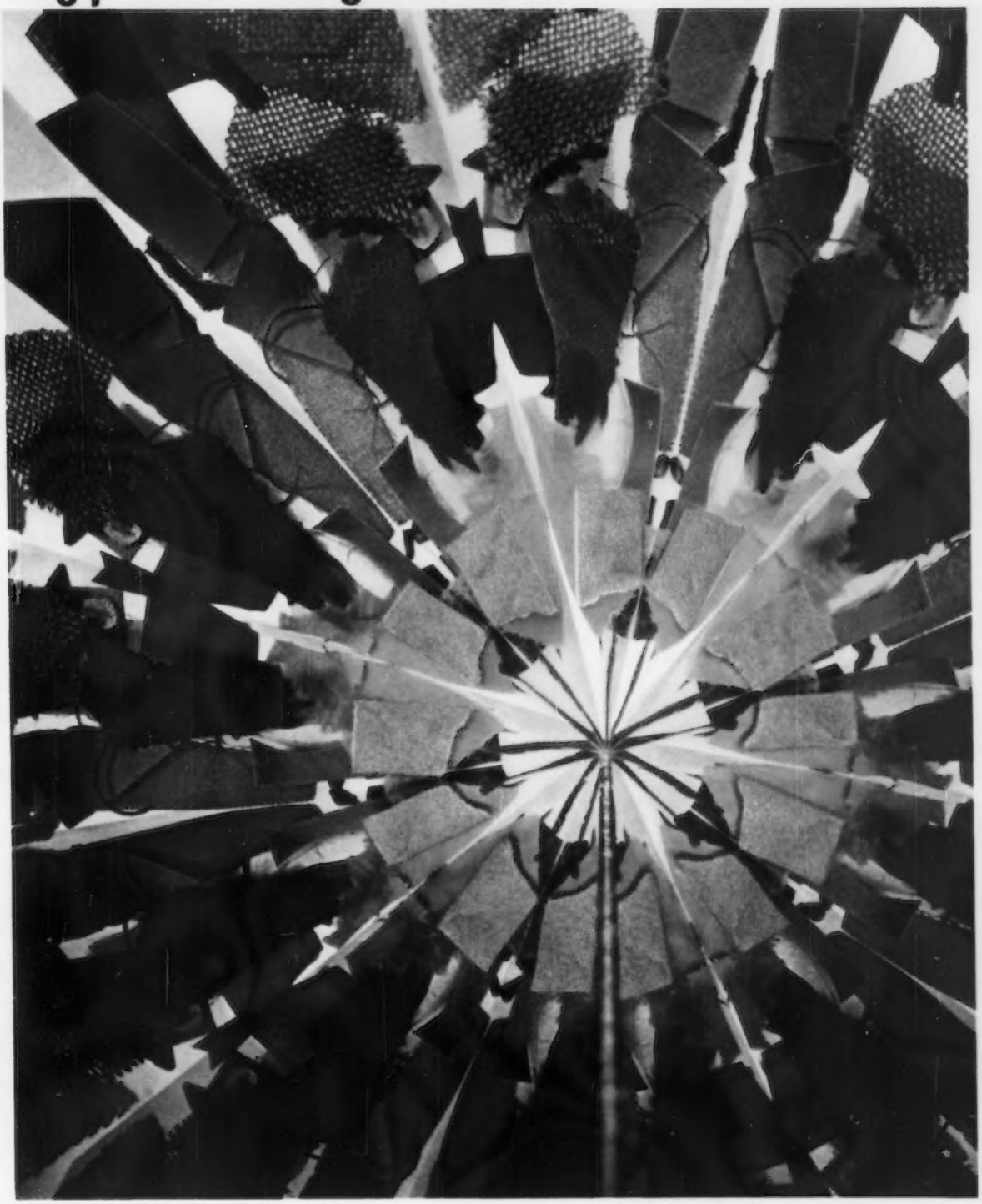
Kleen-Stik manufactures pressure-sensitive backed labeling papers, foils, and films primarily for the graphic arts and packaging industries. National Starch and Chemical Corp. is a leading manufacturer of packaging adhesives, and is also a major producer of vinyl acetate polymers and copolymers, and is a substantial refiner of corn starch and its derivatives.

LeClere Retires from Kress Box Presidency

St. Regis Paper Co. announces that J. Burk LeClere, president of the F. J. Kress Box Co. Division retired December 31, 1960. Mr. LeClere, who is also a director of St. Regis, will continue to serve on the board. He was elected a director of St. Regis in January 1959, shortly after the Kress company became a part of St. Regis.

Mr. LeClere had served as president of Kress since 1939. He had been associated with Kress in Pittsburgh, Pa., since 1926 when he joined the company as production manager. He became secretary of Kress in 1929 and vice president in 1934.

Geigy offers a brighter '61



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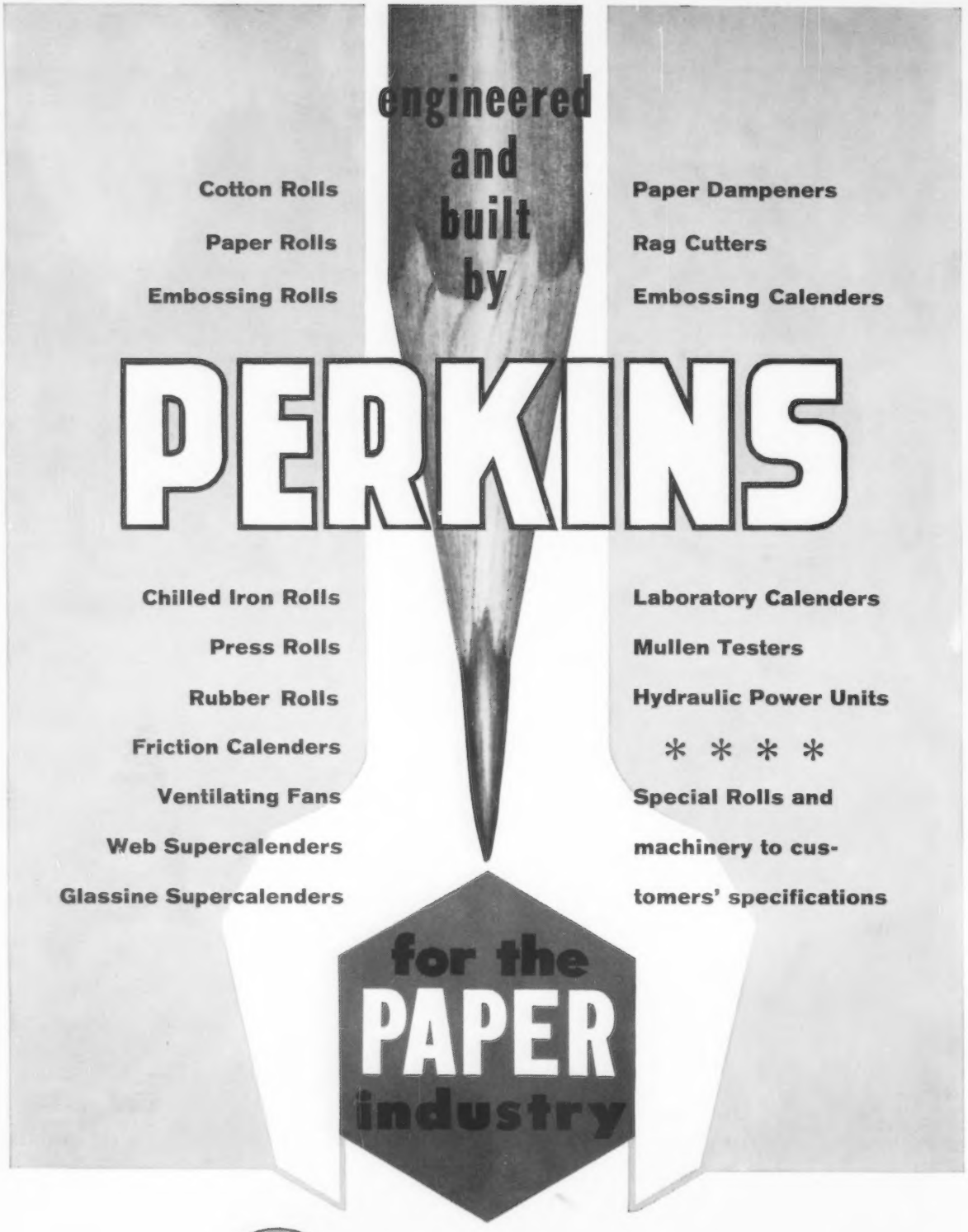

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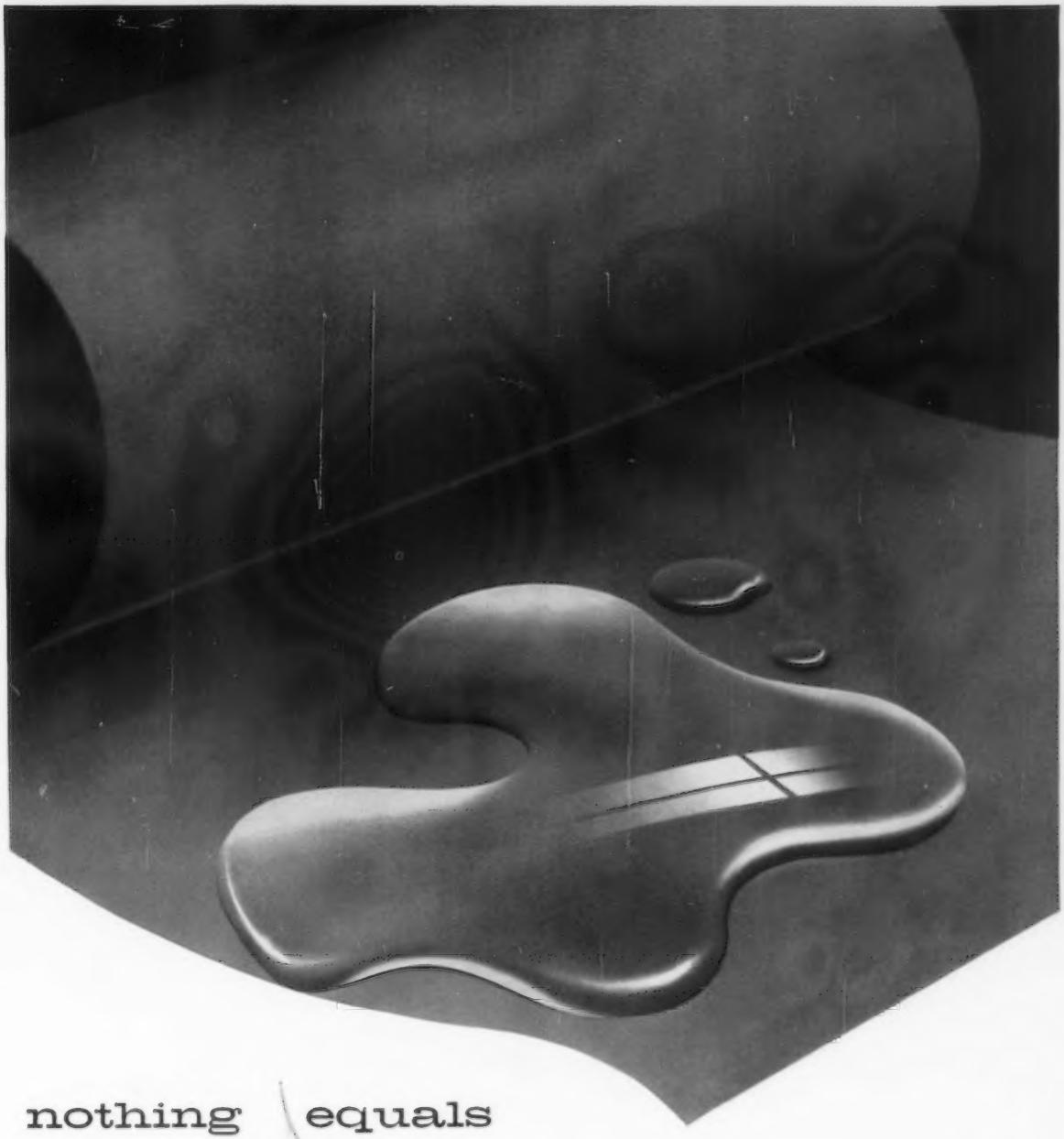

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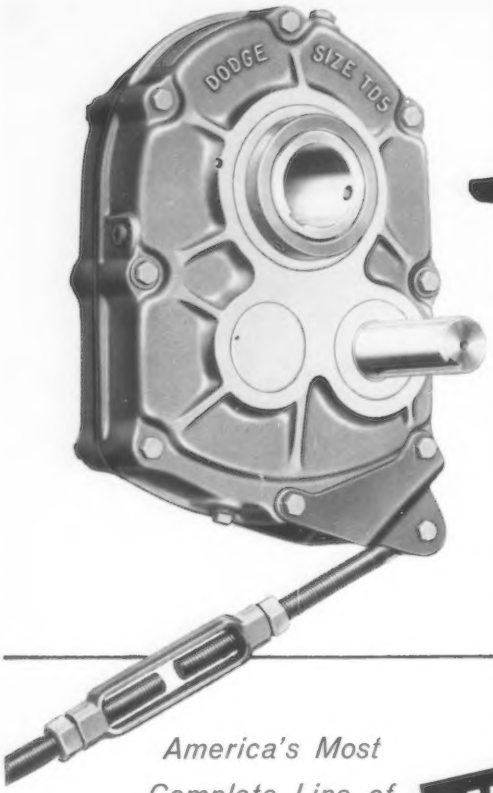

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By eliminating foundation, sliding base and flexible coupling this modern speed reducer has saved untold installation time and untold dollars of cost.

The rugged semisteel housing developed by Dodge has never been improved upon. It is corrosion resistant—and it has the strength to hold bearing seats in line for the life of the unit.

Dodge design provides wide spacing for the bearings. Loads are carried easily, contributing to Torque-Arm's long life and very high efficiency. The gears are finest quality—helical, heat treated steel.

Torque-Arm mounts vertically or horizontally in any position around the driven shaft. It locks to the shaft on *both* sides of the housing. The holes in the output hub provide simple removal with puller. Overload release and built-in backstop are optional.

Dodge Torque-Arm is America's most widely used shaft mounted speed reducer. It is stocked by your local Dodge Distributor. Ask him. Or write us for bulletin.

DODGE MANUFACTURING CORPORATION, 2900 Union, Mishawaka, Ind.

DODGE

of Mishawaka, Ind.

OVER 50 Goulds centrifugal pumps play a vital role in the recently completed expansion program of Union Bag-Camp Paper Corporation at Savannah, Ga. Pumps range in size from the 1½″ x 2″ stainless steel color system supply and transfer pumps to the 24″ x 24″ primary cleaner pump and are utilized for water, white water, stock, various liquors—practically every application encountered in modern paper mill practice. Services covered include pumps for the machine, blow tank, cleaners, showers, high-density storage refiners and many other applications.

For paper pump bulletins, write to Goulds Pumps, Inc., Dept. PT-11, Seneca Falls, N. Y.

GOULDS PUMPS

How Du Pont brighter pulp...save

Mechanical pulp bleaching...

A combination of peroxides can save up to $1.25 a ton over a hydrogen peroxide treatment.

Over 95% of all groundwood bleacheries have found that a combination of hydrogen and sodium peroxides cuts bleaching costs up to $1.25 a ton. The reason—combination formulas eliminate the use of caustic soda.

How is this possible? Because of the bleaching chemistry involved. When hydrogen peroxide is used alone, substantial quantities of caustic soda must be added to assure effective bleaching. But when sodium peroxide is part of the formula, caustic soda is formed and additional quantities aren't needed. When caustic limits of this solution are reached, hydrogen peroxide is added to complete the balance and the bleaching formula is now ready to use.

The charts below show the savings possible in a one-stage tower bleaching process when a combination of peroxides is used instead of a single hydrogen peroxide: For normal brightness, the saving runs from $.90 to $1.00 a ton; for premium brightness, $1.15 to $1.25 a ton.

You can obtain cold soda pulp and groundwood pulp brightness as high as 75 by this method. Cold soda pulp can be bleached in the refiner in absence of a bleaching tower with brightness gains up to 20 points.

For further information, get in touch with your Du Pont Representative listed at right.

EXAMPLE #1

ONE-STAGE TOWER PROCESS FOR NORMAL BRIGHTNESS

A. Using combination of peroxides

5.0% silicate
1.2% "Solozone" sodium peroxide
0.7% "Albone" 50 hydrogen peroxide

B. Using one peroxide only

5.0% silicate
1.2% NaOH
1.7% "Albone" 50 hydrogen peroxide

SAVINGS OF $.90 TO $1.00 PER TON BY USING COMBINATION OF PEROXIDES

EXAMPLE #2

ONE-STAGE TOWER PROCESS FOR PREMIUM BRIGHTNESS

A. Using combination of peroxides

5.0% silicate
1.5% "Solozone" sodium peroxide
1.25% "Albone" 50 hydrogen peroxide

B. Using one peroxide only

5.0% silicate
1.5% NaOH
2.5% "Albone" 50 hydrogen peroxide

SAVINGS OF $1.15 TO $1.25 PER TON BY USING COMBINATION OF PEROXIDES

Peroxides give you you up to $1.25 a ton!

Chemical pulp bleaching...

Peroxides—alone or in combination—give brightness up to 92 with excellent stability.

Mills throughout the country are finding that peroxides, alone or in combination, can give chemical pulp high brightness stability—without significant decrease in pulp strength or yield.

IN KRAFT BLEACHING, a five-stage process is producing outstanding results for a number of mills, among them a southern papermaker now producing over 100,000 tons of high brightness pulp annually. This process combines the best advantages of three bleaching agents—hypochlorite, chlorine dioxide and peroxide—to give brightnesses up to 90 with excellent brightness stability.

IN SULFITE BLEACHING, three peroxide processes are proving successful—a single-stage peroxide process which brightens pulp up to 75; a two-stage hypochlorite-peroxide process which brightens up to 86; a four-stage chlorine-caustic-hypochlorite-peroxide process which brightens up to 92. For information, call your Du Pont Representative listed below.

TECHNICAL SERVICE FOR YOU . . . Peroxides have a powerful bleaching action that produces high brightness pulp with excellent brightness stability. But it takes skill and experience to use peroxides efficiently. With Du Pont "Albone" hydrogen peroxide and "Solozone" sodium peroxide, you get the most authoritative advice and service available . . . from the manufacturer of *both* products.

Du Pont specialists can give you practical bleaching formulas for groundwood, cold soda, kraft and sulfite. They'll help you set up your bleaching operation, train operators, and check frequently to make sure your bleaching quality stays high and costs stay low.

Call your Du Pont representative listed below; he'll be glad to start a program to help you determine the advantages of Du Pont peroxides in your mill. Or write: Du Pont, Electrochemicals Department, Peroxygen Products Division, Wilmington 98, Delaware.

MIDWEST AREA
W. L. Liike, Chicago, Ill. • INdependence 3-7250

WEST COAST AREA
P. E. Kiefer, Portland, Oregon • CApitol 7-1281

NEW YORK & BOSTON AREA
C. R. Lombard, NewYork, N.Y. • LOngacre 3-6440

SOUTHERN AREA
R.W. Hammond, Charlotte, N.C. • FRanklin 5-5561

Or call: N. J. Stalter, Wilmington, Del. • PRospect 4-4698

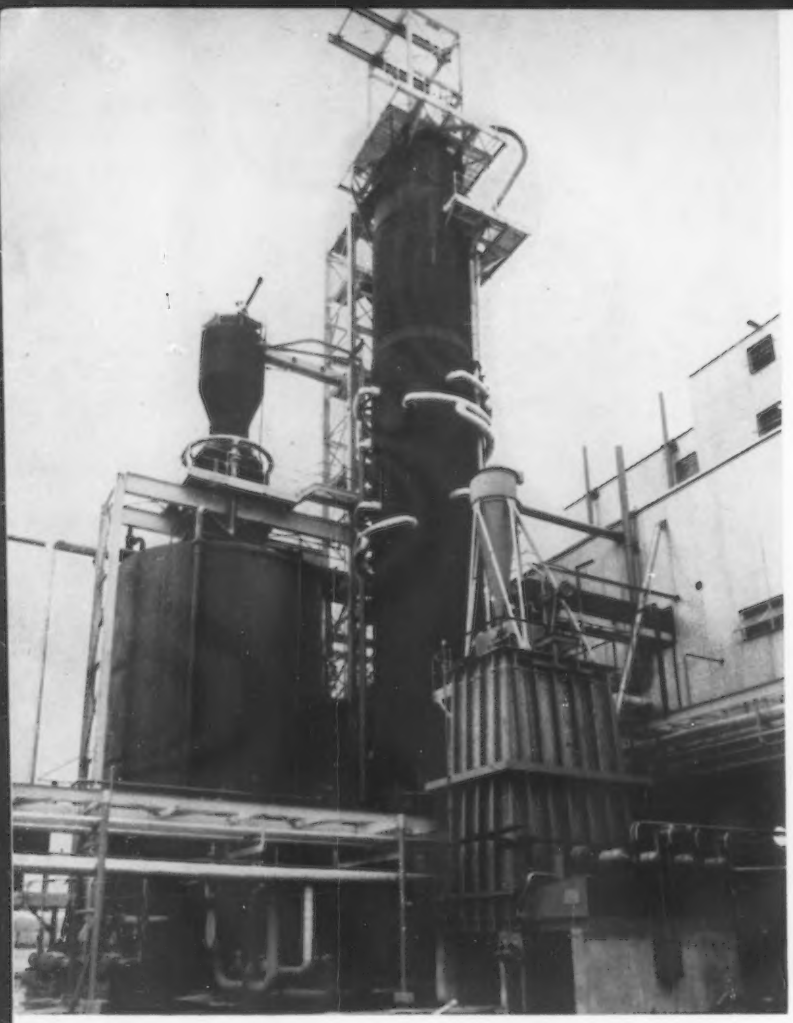
DU PONT PEROXIDES

ALBONE® hydrogen peroxide

DU PONT REG. U. S. PAT. OFF.

SOLOZONE® sodium peroxide

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY



Just a quick glance at this special cold soda soak bin and continuous kraft digester, both part of a $40 million Augusta, Ga., facility, and one can see that . . .

Plant 510—CCC's Latest, Presents Many Interesting Features

Harry Dyer,
Assistant Editor,
Paper Trade Journal

Continental Can Co.'s latest project, a 350 ton capacity pulp and paperboard mill, unimposingly designated as Plant 510, was fulfilled last October 24 with the production of its first reel of paperboard made from its own pulp. Built to manufacture a varied line of board products, the new mill completes a $40 million program in Augusta, Georgia. Essential features of plant 510 include:

- Modern wood handling and preparation area with complete utilization of residue products.
- Kraft pulp mill using a continuous digester rated at 350 t.p.d.
- High-density four-stage upflow chlorine dioxide bleach plant.
- Cold soda pulp mill designed to produce 125 tons of pulp from Southern hardwoods in a specially designed soaking bin.
- A 236-inch high-speed liner board machine.
- Automated roll finishing area, including a specially designed sheet cutter.
- Centralized chemical preparation area.

The entire mill employs 380 persons. In charge of the overall operations is plant manager William L. Schnorbach. Ray McCormick is general superintendent, and Vernon B. Bodenheimer is technical director. Heading up other departmental activities are:

Maintenance & Engineering—Robert Ervin, director.

Pulp Mill—Charles W. Ray, superintendent; George Van Goethem, assistant superintendent.

Paper Mill—Brookshire C. Moore, superintendent; Henry Booth, technical assistant.

Board Finishing—John W. Robinson, superintendent.

Power—Harold W. White, superintendent.

Other supervisory personnel include: N. M. LeMaistre, chief chemist; William P. Fuller, water and waste supervisor; George Clossay, personnel manager; J. H. MacLean, purchasing agent; W. L. Coker, accountant.

Engineering consultants for the new mill were J. E. Sirrene Co. who did the detail design work in cooperation with the project team of Continental Can Co. engineers, under the overall direction of Charles S. Huestis who was responsible for the engineering and construction of the new mill. The Central Engineering Dept. of Continental Can Co. under the direction of Curt Young, manager of engineering, directed the design of the power plant. General contractor for the plant was Daniel Construction Co. of Greenville, S. C.

Although the new mill does not introduce any revolutionary processes, it does bear a number of extremely interesting innovations. Technical director Verne Bodenheimer, who has been associated with the project almost from its inception, lists the following among these:

- Concrete woodyard. Two concrete pads 105 by 800 feet and 8 inches thick are laid on a compacted soil base.
- Automatic chip blending system from the silos.
- Cold soda pulping system with single-stage refining and in-the-refiner bleaching.
- Latest two-stage liquor diffusion and extraction system in the continuous digester.

W. L. Schnorbach
Plant Manager

- Claflin refiner substituted for knotters ahead of the washers. This procedure eliminates foaming that usually occurs on knotters.
- Refining and chlorination of pulp screening rejects in a separate tower with their subsequent reintroduction into the system.
- Automatic blending of four possible pulps: bleached and unbleached pine, bleached pine and hardwood, and bleached cold soda.
- Odor reduction devices such as chlorinating digester gases, installing a scrubber on the dissolving tank, 98-99 per cent efficiency on the electrostatic precipitator with scrubber.

Wood Handling and Preparation

Five-foot pulpwood arrives at the mill by rail or by truck. Two 50-ton crawler cranes equipped with five-tine, one-cord capacity Mack grapples unload the wood into one of two piles—one for hardwoods, one for Southern pine. Each pile, built up on the concrete pads, has a storage capacity of 12,000 cords.

Wood is reclaimed from the piles by the crawler cranes and a travelling carriage crane which dump it into a 3-feet wide, 800-foot long steel-lined flume. The carriage crane also unloads RR cars directly into the flume. The flume is equipped with a drag chain conveyor and rotating disk screen for solids and bark removal. A 10,000 g.p.m. pump constantly recirculates flume water.

A 124-foot single chain drag jack ladder lifts the wood 45 feet out of the flume and deposits it into a 66-inch belt conveyor, which carries it 90 feet into two barking drums. The drums are 12 feet in diameter and 67½ feet long. Each consists of three sections provided with individual chain drives. Two sections, with chain drive and gear units are powered by a 150 h.p. motor. The remaining section is powered by a separate chain drive and 75 h.p. motor. The logs are barked dry.

Debarked wood is carried from the drums by a three-strand, 100-foot chain conveyor with a 12-foot vertical rise to the top of the woodroom building and onto a series of kickers. Here, 12 spiked rolls align the logs into a single file prior to transfer by an 8-foot, 6-strand conveyor onto a 72-inch, 45 foot sorting belt. Here, incompletely debarked logs are pulled off the belt by a sorterman and returned to the drum via a 104-foot single strand chain conveyor. Oversize logs are pulled off the belt by another man positioned on the opposite side of the belt and reduced in

WOOD PREPARATION: chipper and screen house, barking drums, flume pumps and conduit, bark handling system. Power house (note short stacks) and salt cake silo are in background.

a hydraulic splitter. A 49-foot single chain conveyor returns the split pieces to the main conveyor.

The chipper feed conveyor is a 30-inch wide, 48-foot belt leading into a chute charging the 110-inch disk, 12 knife chipper powered by a 800 h.p. motor. Chips are discharged into a bucket elevator, carried up to roof and dropped into a hopper feeding two banks of two deck screens. Oversize chips are retained on a steel screen with 1¼ inch openings and discharged into a 30-inch, 41-foot belt. These chips re-enter the chipper feed log conveyor just ahead of the chute and are carried into the chipper along with the logs. CCC reports that this is a very satisfactory re-chipping procedure with little production of fines or shreds.

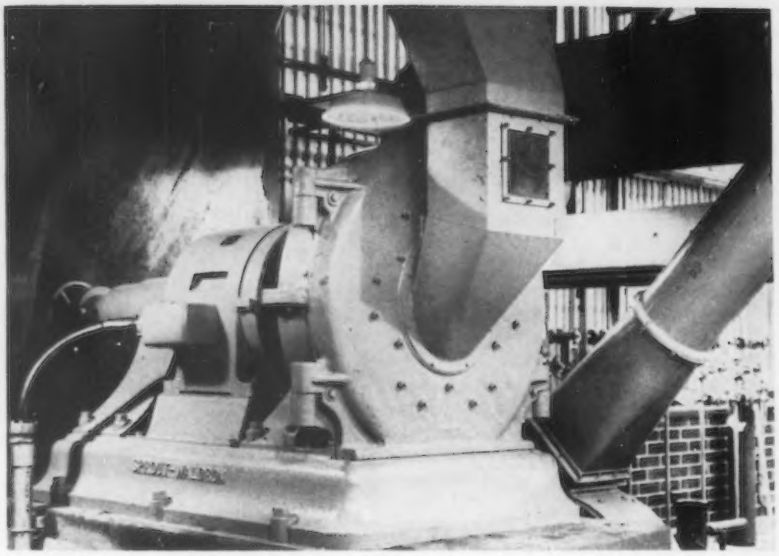
Accepted chips are retained on a wire mesh with 3/16 inch openings, and discharged into a 30-inch, 40-foot belt leading to the main silo conveyor. This latter belt is 36-inches wide, and 346-feet long, and rises 92 feet to the drag flight distribution conveyor on top of the chip silos.

A series of belt conveyors collect sawdust from the screens, bark from the drums and flume, and converge at a central point in the woodyard near the flume. Here, a 30 inch, 805 foot belt rises 37 feet to carry the material into a 5 by 14 foot, one-deck vibrating screen. Oversize material from this screen is hogged and mixed with the accepted material, all of which are pneumatically conveyed to the boiler house.

Three Silos

The three tile-lined chip silos are each 30 feet in diameter and 60 feet high, capable of storing 200 cords of chips. Each silo is equipped with two vibrators, and 17 foot diameter plate feeders operating at 3 r.p.m.

Two systems of belt conveyors carry chips from the silos up 80 feet to the digester house chip bins, first passing under electromagnets and over continuous weightometers. One system is composed of 30-inch belts for conveying pine chips, and the other is composed of one 30-inch belt for conveying hardwood chips. The turntables may feed into either conveyor system automatically depending on which species is contained in the silo. Flow of chips to the bins is programmed and regulated from the digester house by positioning hydraulic plows on the turntables and is checked by the conveyor weightometers and integrators. The level and feed to each of the three chip bins is automatically controlled and indicated on the same panel.



COLD SODA chip fractionator is a single-disk mill.

Cold Soda Mill Uses Live Bottom Soak Bin

The cold soda mill at Augusta signifies the eighth such facility in the United States since the initial one was completed in 1956. At CCC, the cold soda pulp mill is designed to manufacture 125 t.p.d. and is operated on the same premises as the kraft mill, but retains its own process flow from start to finish.

One of the three aforementioned chip bins in the digester house contains only hardwood chips for the cold soda pulp process. From this bin the chips drop onto a 7½ foot diameter turntable. A remotely adjustable plow meters the chips into a chute that leads into a chip shredder. This latter piece of equipment is a single disk mill driven by a 75 h.p. motor which shreds the chips into pins. A blower picks up the pins and pneumatically conveys them into a cyclone which settles them into the soaking bin. Caustic solution, at a strength of 25 g.p.l. is metered into the chip stream as it leaves the cyclone, based on a rate equal to 5 per cent of the weight of b.d. wood.

The heart of the cold soda system is this special bin designed to act as a caustic soak tank to assure thorough impregnation of the pins. The stainless steel unit, approximately 20 feet by 12 feet by 24 feet high is constructed to withstand a full head of liquid within the tank. The live bottom section consists of twelve 12 inch diameter stainless steel screws. These screws are driven in groups of three by 5 h.p. variable speed d.c. motors.

The bin is installed outdoors without benefit of additional shelter. Impregnation occurs at atmospheric pressures and temperatures. Retention time of the pins in the tanks averages 120 minutes. The reason for shredding the chips is to increase the area available for impregnation. Discharge from the bin is accomplished by a paddle type cross-conveyor which continually mixes dilution liquor and chips to assure proper pumping consistency.

An 800 g.p.m. ACAP pump then sends the impregnated chips into a flat-bed drainer. Effluent from this drainer is returned to the bin. The chips are distributed by a 12 inch screw conveyor through Uni-flow feeders into any one of six single disk refiners, each of which is powered by a 700 h.p. synchronous motor. White water from a subsequent decker in the system is used to dilute the chips entering the refiners.

Cold soda pulp is bleached by metering hydrogen peroxide bleach liquor to the chip stream as it enters the refiners. The hardwood pulp may be brightened from 38-40 to 60-61 GE points when a 1¼ per cent solution (based on the weight of b.d. chips) is used.

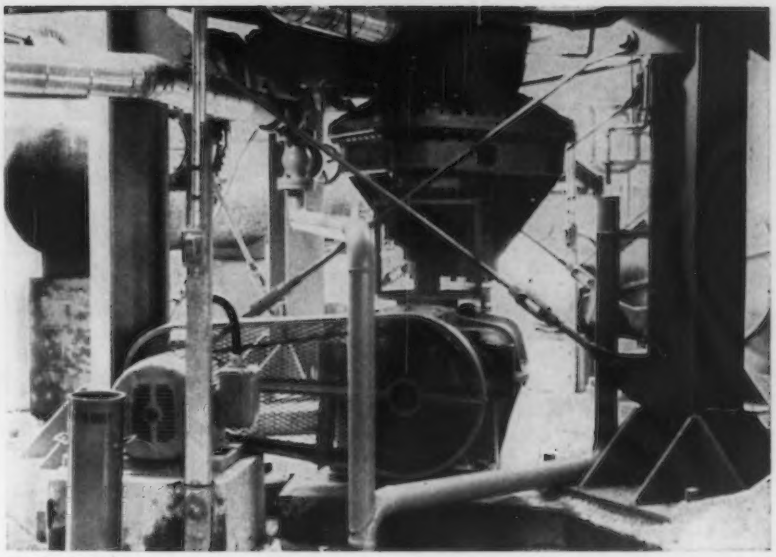
The fiberized chips drop from the refiners into a 19 foot diameter, 11 foot high tile-lined raw stock chest. The refined stock is next screened in a single centrifugal screen and then stored in a 6 foot diameter, 11 foot high stock chest. Rejects from the screen are returned to the bin. Ac-

cepts pass through a battery of centrifugal cleaners composed of 32 primaries, 5 secondaries, and one tertiary. Secondary and tertiary accepts are returned to the main flow ahead of the screen; tertiary rejects are sewered.

Accepted stock from the primary cleaners pass through a 19 foot, 10 foot high chest; then it is dewatered on a 11½ foot, 20 foot wide decker. This decker is situated atop a 34 foot diameter, 70 foot high tile-lined chest where the thickened pulp is stored. The chest is located outdoors but the decker is enclosed in a housing constructed of aluminum sheathing. It is reached by a similarly enclosed belt conveyor.

The tower is capable of storing 200 tons of pulp at 12 per cent consistency. White water metered through mining nozzles dilutes the stock at the bottom of the tower, when it is next pumped into a smaller chest, regulated to the desired consistency, and then pumped over to the paper mill.

Effluent from the decker is collected in a 17 foot diameter, 17 foot high seal tank and is eventually used for dilution control at the refiners, raw stock chest, and screened stock chest.



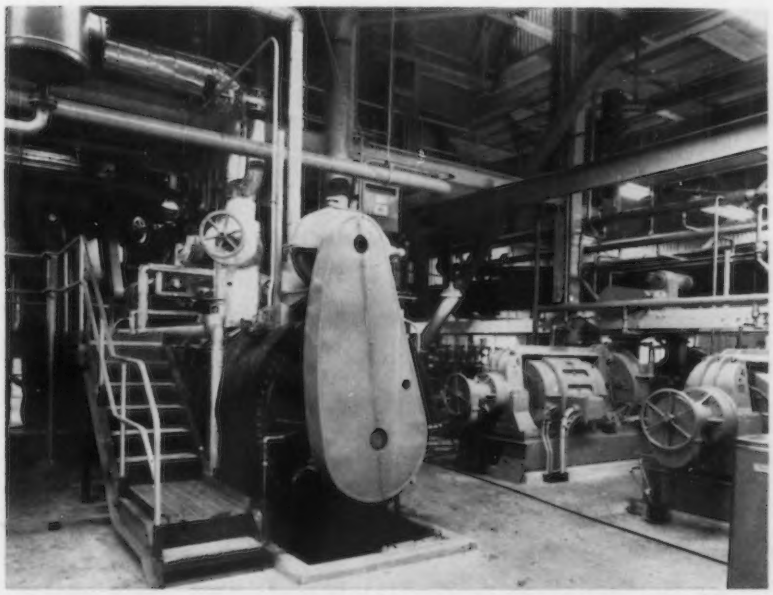
OUTLET DEVICE at bottom of continuous digester, including rotary scraper drive.

Kraft Pulping and Bleaching Is Continuous

The Kamyr continuous digester employs a dual feeding arrangement, comprised of two steaming vessels, low and high pressure feeders. If a cook is to be a pine and hardwood blend, one of the chip bins is filled with pine chips; the other with hardwood chips. If it is to be an all-pine cook, both bins are filled with pine chips.

In any case, chips are metered from the appropriate bin by a variable-speed star-feeder, into a low pressure rotary feeder. The chips then enter the steaming vessel where chips are treated by 17 p.s.i., 288° F. steam for about five minutes as a large screw horizontally conveys them to the discharge end. From here, the chips are discharged down a chute into the high pressure rotary feeder. The steaming vessel uses steam from the blow down tank, the excess being relieved to a turpentine trap. Digester gases are also vented into the steaming vessels and thence through the turpentine trap. The captured turpentine is stored in the chemical preparation area.

The digester, rated at 350 t.p.d., is 13 feet in diameter and 102 feet high. Either side of the dual feeding arrangement is capable of a production of 150 t.p.d. (or better) Incorporated into the digester is Kamyr's latest design of diffusion-extraction system. There are spare upper and lower heaters plus spare pumps which can be utilized in emergencies.

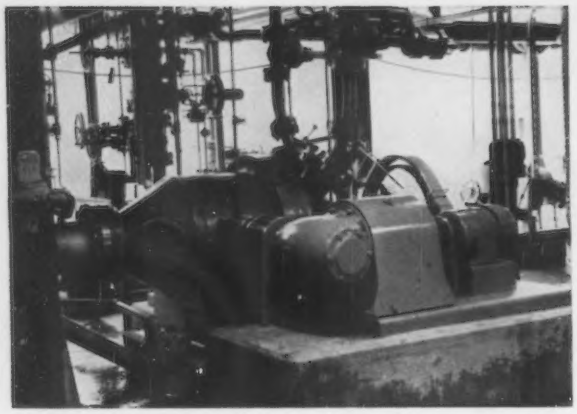


PULP MILL: top floor, showing a steaming vessel, part of chip bin, and cold soda screw conveyor distributing cold soda pulp to refiners (two shown).

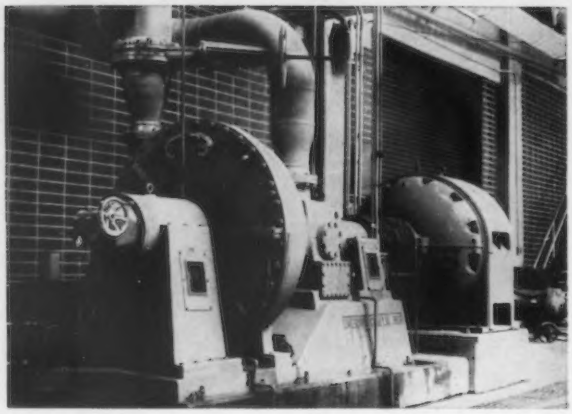
Liquor Circulation

Liquor from the top of the digester is mixed with the chips in the high pressure feeder. Chips and liquor enter the digester through the top separators, which contain circular screens. The screened liquor's recirculated to the high pressure feeder by a pump; the chips move down through the body of the digester.

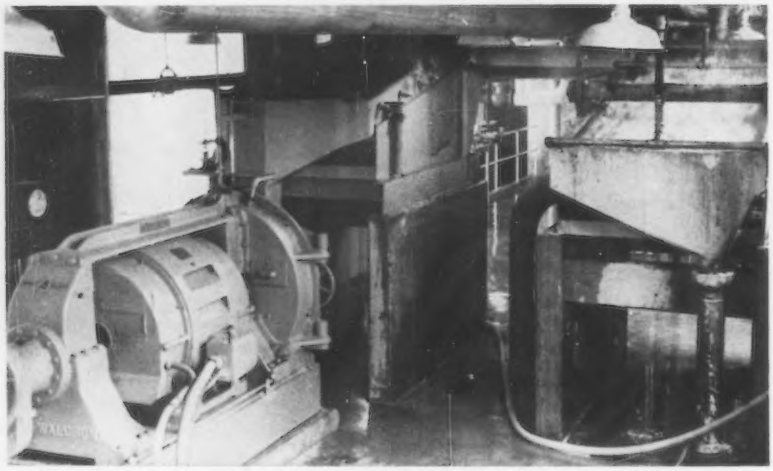
Meanwhile, white liquor, together with some black liquor from the brown stock washers, is pumped into the top of the digester at a point just below the separators. The upper



LIQUOR SEPARATOR, where some black liquor is recirculated to digester for "cold blow." Pulp goes to blow tank.



BROWN STOCK REFINER installed in place of knotter screens eliminates foaming usually occurring at this point.



REJECTS REFINER AND SCREENS treat rejects from secondary centrifugal screen, which are chlorinated and returned to washed stock chest.

zone of the digester serves as a soaking area. As the chips move downward, liquor is removed at about the halfway mark and recirculated through an indirect heater back to the top of the digester. At approximately the ¾ mark down, liquor is again drawn off, heated and recirculated back to the top entry.

Cooking of the chips starts at the upper circulation zone and continues until the chips reach the bottom of the digester. Here cooled black liquor is introduced, cooling the pulp prior to discharge by a scraper arm through a blow valve. The "cold blow" as it is known, has a two-two-fold effect: first, it avoids strength losses caused by mechanical action to the pulp while hot; second, it raises the solids contents of the black liquor two to three per cent.

BLEACH TOWERS: chlorination (foreground) followed by caustic, hypo, and chlorine dioxide towers. High density pulp storage chests in rear.

Discharge Separator

From the blow valve, the pulp enters a discharge separator where some black liquor is removed for the cold blow and to control the discharge consistency. The pulp then enters the blow tank. From there it drops into the brown stock storage tank.

The 102 foot high digester has an available chip volume capacity of 11,400 cu. ft. and an available liquor volume of 95,000 gallons. Temperature of the liquor at the top separators is about 245° F. At the upper circulation zone the chips are heated to about 295° F. while in the lower circulating zone the liquor reaches a temperature of 325° F. The temperature of the cooling black liquor is nearly 240° F. Instrumentation is quite extensive and process variables are controlled and indicated on a central graphic panel. This includes

chip feed from the silo to the bins, and from the bins to the steaming vessels. Standard flow and level indicators record and control white and black liquor feeds, liquor circulation, steam flow and other variables. Blow valve operation is also remotely controlled from this panel.

Pulp in the agitated brown stock tank is first pumped through a Claflin 303 refiner before being separated from the black liquor in the countercurrent washers. As previously noted, the Claflin replaces the conventional knotter. This procedure, while not entirely new (it is practiced in two or three other kraft mills) effectively reduces foaming, meanwhile disintegrating large knots and fiber clumps.

Washing and Screening

The washing sequence is a typical three-stage countercurrent system employing 11½ foot diameter by 16 foot drums with variable speed rheostat controls. Fresh water is showered onto the last drum and strong black liquor is drawn off the first drum's drop leg. Part of this black liquor is used at the digester, the remainder is evaporated in the recovery process. Stock, as it is repulped at the final washer, is diluted with white water from a subsequent screened stock washer. It then enters a washed stock chest. There is installed over the brown stock washers a Fiberglas hood which contains and exhausts vapors.

The screen area consists of three primary centrifugal screens and one secondary centrifugal screen. Accepted stock is washed over a 11½ foot diameter, 16 foot decker. Rejects enter a 36 inch single disk refiner, powered by a 200 h.p. motor, pass through a Cyclean centrifugal cleaner system, and then are dewatered via a vibrating screen. The rejects are then chlorinated with Cl_2 in a separate tower and are eventually returned to the main system at the washed stock chest.

Four-Stage Bleaching

Rated at 350 t.p.d., the Impco-designed bleach plant consists of a four-stage system: chlorination, caustic extraction, sodium hypochlorite, and chlorine dioxide. The second and third stages can be interchanged when slightly higher brightnesses are desired. The chlorination stage is a typical upflow low-density tower. The remaining three towers are upflow high-density towers. Each tower has the following design specifications:

Chlorination tower—19½ feet diameter by 76 feet high; tile lined, mastic insulation; pulp retained at 3 per cent consistency.

Caustic tower—15 feet diameter by 50 feet high; tile lined, mastic insulation; pulp retained at 12-14 per cent consistency.

Hypochlorite tower—17 feet diameter by 50 feet high, tile lined, mastic insulation, retained at 12-14 per cent consistency.

Chlorine Dioxide tower—19 feet diameter by 76 feet high, tile lined, mastic insulation; retained at 12-14 per cent consistency.

Also featured in the bleach plant (the towers are actually located outside the building) are swirl mixers leaving each high density tower, single shaft steam mixers, thick stock pumps located off the discharge of each washer's repulper, fully automatic pH samplers on top of each tower. The amount of chlorine added to the stock at the chlorination stage is controlled through oxidation-reduction potential. The remaining bleach chemicals are metered to the stock through magnetic flowmeters.

The washers following each tower is a 9½ foot diameter, 16 foot drum with the exception of the first one, which measures 11½ by 16 feet. Effluent from the washers is clarified in settling basins with the rest of the mill effluents.

A 36-inch, 112-foot belt conveyor carries the stock from the last bleach washer into one of three 30-foot diameter, 60-foot storage chests. Each of these towers, situated outside, has the capacity to hold 200 tons of pulp at 16 per cent capacity. Two of the bleach chests contain pine pulp, the remaining one contains pine-hardwood pulp. There are two additional towers, one for the storage of semi-bleached kraft, the other for unbleached kraft.

Using white water from the paper mill's saveall, mining nozzles dilute the pulp prior to drawing it from any of the chests. The stock is regulated to consistency as it enters an appropriate pine consistency or pine-hardwood consistency chests. From them it is then pumped over to the paper mill.

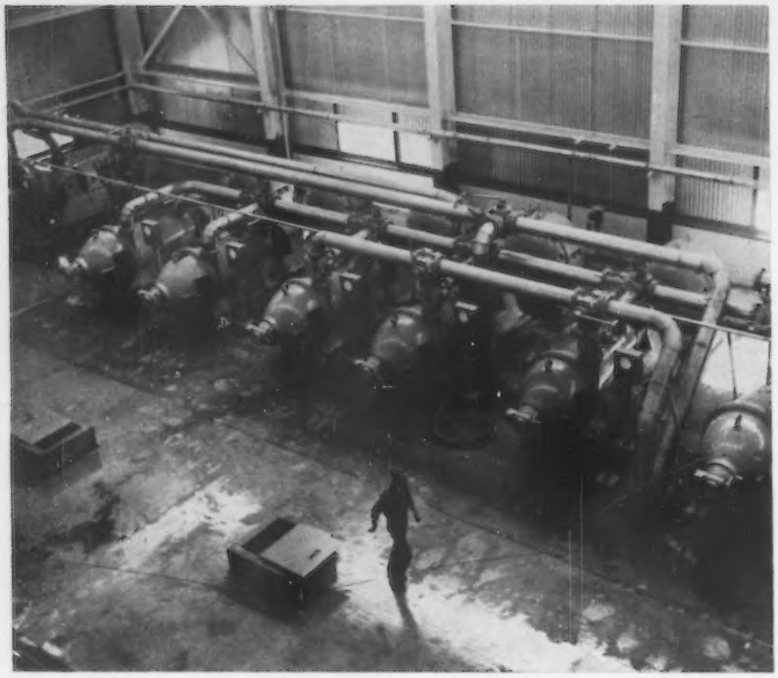
Brown stock washers, screens, screened stock decker and bleach washers are all installed on the top floor of the pulp mill building. Instrumentation and controls for these three areas of operation are centralized into one enclosed control room.

R. McCormick
General Superintendent

V. Bodenheimer
Technical Director

C. W. Ray
Pulp Mill Superintendent

B. C. Moore
Paper Mill Superintendent



STOCK REFINERS: Claflin refiner for cold soda, plus six of eight primary and secondary jordans.

Board Machine Makes Variety of Products

Stock preparation equipment, chemical additive systems, the liner board machine, and the finishing area are contained in the separate machine building. Stock preparation equipment located on the basement floor includes a surge chest, refiner chest, saveall white water chest, broke chest, primary and secondary machine chests, and secondary stock cleaners for the secondary headbox stock. On the operating floor are situated the refiners, saveall, stuff box, Centricleaners and Deculator for the primary stock.

Five Jones Majestic jordans, each driven by a 500 h.p. synchronous motor, comprise the primary refining system. A secondary system contains four more similar refiners which can operate in series or parallel with the primary refiners. Pine stock from the pulp mill consistency chest passes through the surge chest, through the primary refiners, then into the refiner chest.

Cold soda pulp is pumped from its appropriate consistency chest; brushed in a Claflin 303 refiner and passed into the refiner chest, if it is to be bottom liner stock. Otherwise, it passes directly into the secondary machine chest.

The four secondary refiners are fed from the refiner stock chest. Then this stock is passed under pressure into the primary machine chest. Magnetic flowmeters control the blend of the various furnishes to the refiners. Ahead of each flow meter is a consistency regulator.

A 11½ by 20 foot vacuum saveall thickens stock from the refiner chest and the board machine's couch pit; the thickened stock is passed to a saveall stock chest and later reenters the refiner chest. Repulped broke from the board machine is also returned to the refiner chest after intermediate storage in a broke stock chest. White water from the saveall is used for dilution at the high density storage chests, primary headbox, and broke chest.

Stock from the primary machine chest is pumped through a stuff box consistency regulator into a battery of 24 primary, three secondary and one tertiary Centricleaners. Accepts from the primaries pass into a Deculator and through to the primary headbox. Secondary and tertiary accepts return to the pump ahead of the cleaner battery. Tertiary rejects are sewered.

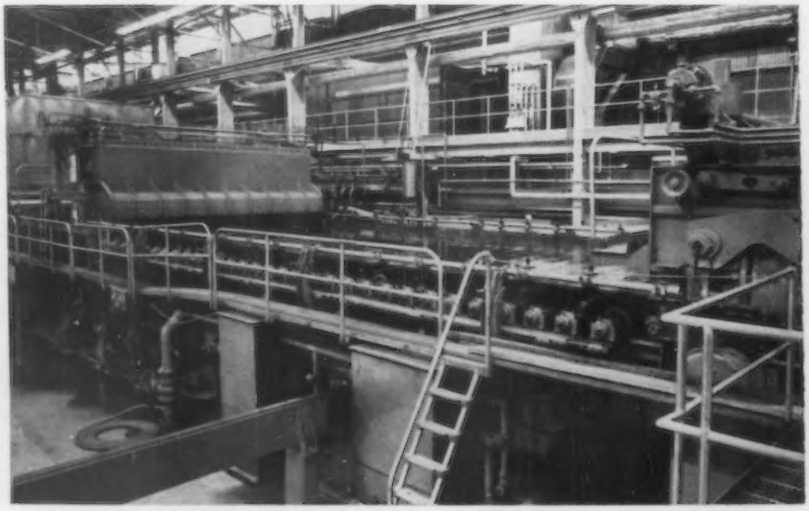
Stock from the secondary machine chest is discharged directly through a Centriscreen and into the secondary headbox. Centriscreen rejects pass through six Cycleans whose accepts return to the secondary machine chest, and whose rejects are sewered.

Board Machine

The Beloit right-hand removable type fourdrinier is designed for making a variety of board grades from 25 lbs. through 100 lbs. per 1000 sq. ft. at speeds up to 1500 f.p.m. Said grades include folding carton, tag card, bristol board, carrier board, plate and cup stock bleached and unbleached liner board among others. The 236-inch wide machine trims a deckle width of 216 inches.

Stock for the primary sheet is fed from the Deculator through a 21,000 g.p.m. fan pump direct connected to a 500 h.p. synchronous motor, through a cross-over distributor and stainless steel sizing chamber and

236-INCH FOURDRINIER emphasizing primary and secondary headboxes.

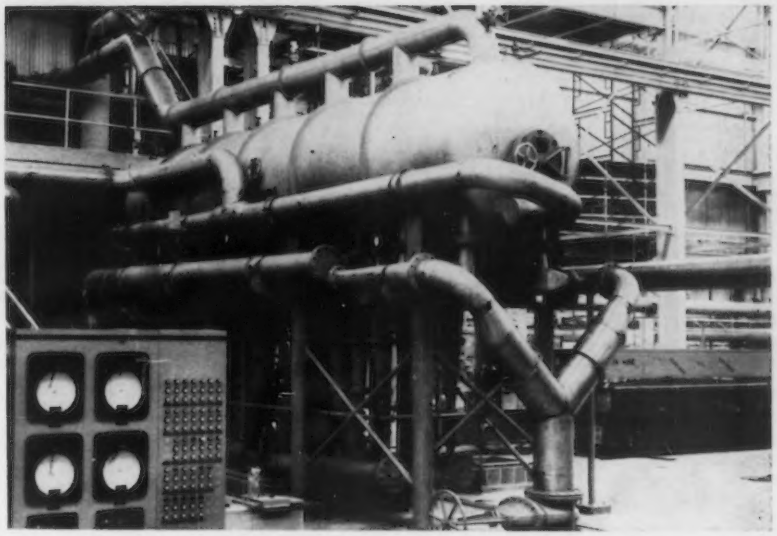


rectifier roll into the primary pressure headbox with three rectifier rolls. Flow from the fan pump to the distributor is controlled by a Beloit tear-drop valve.

The stock flows onto the 155½ foot long shaking fourdrinier section whose breast roll is 28 inches in diameter and is equipped with an oscillating doctor. The 32 table rolls are aluminum with Fiberglas covering and stainless steel deflectors. There are 6 oscillating suction boxes equipped with drop legs to a seal pit, a 24 inch, rubber covered lump breaker roll, a 22 inch dandy roll spirally wound with Monel wire and six wire return rolls. The wire is driven by a 30 inch diameter turning roll. The suction couch is bronze, 42 inches in diameter.

Stock for the secondary sheet is fed by a 5550 g.p.m. fan pump driven by a 150 h.p. motor through the Centriscreen previously mentioned into the stainless steel secondary headbox, with two rectifier rolls. White water collected in the wire pit is used for dilution at the suction side of the Centricleaner fan pump. Couch pit stock is returned to the saveall with seal water from the flat boxes providing dilution.

The first two presses are of the vertical straight-through type, with rubber covered bottom suction rolls and rubber covered top plain rolls mounted on air-loaded pivot arms for nip pressure control. The third press follows a five drum predryer section and is a vertical straight through press containing a rubber covered bottom roll and a rubber covered air-loaded top roll. Oscillating doctors are provided for the three top rolls and the press felts are equipped with Vickery conditioners. The fourth press is a smoothing press.



DECULATOR AND CENTRICLEANERS on primary (bottom liner) stock system.

Four Nash vacuum pumps coupled in pairs to 600 h.p. synchronous motors supply water removal requirements for the flat boxes, couch, first and second presses.

The dryer section consists of 70 sheet dryers and 16 felt dryers all 60 inches in diameter by 250 inches face divided into five sections. The dryers are operated for 125 p.s.i. pressure. Dryers are drained by a Mason-Neilan condensate removal system. A Beloit oil circulating system consisting of roll filter, pressure tank, sump return tanks, pumps and controls and sight feeds, provides dryer roll lubrication. Doctors are mounted on 16 of the paper dryers. The entire dryer section is provided with automatic rope carriers.

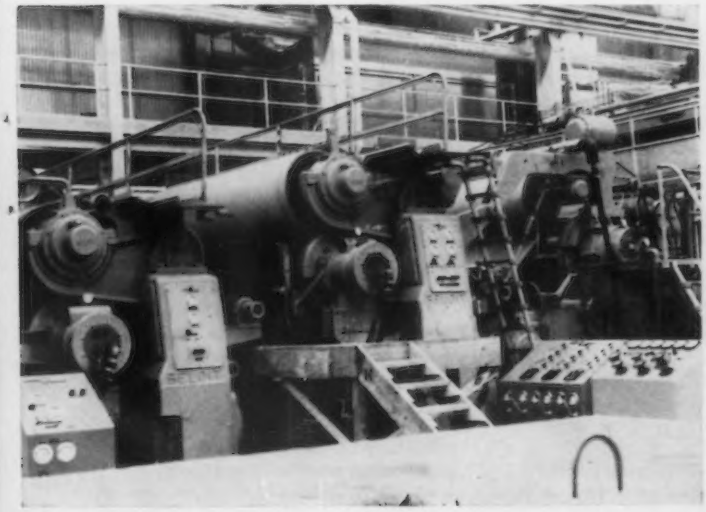
A breaker stack is installed between the third and fourth dryer sections. Both top and bottom rolls are rubber covered.

A horizontal size press is installed between the fourth and fifth dryer sections and consists of two 28 inch rubber covered rolls.

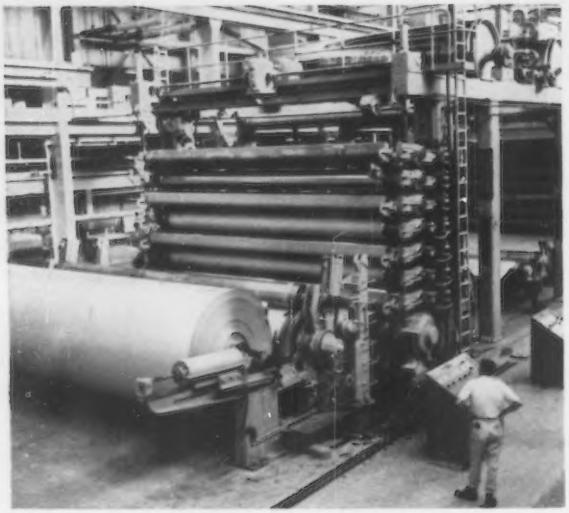
There are two open sided calender stacks each consisting of 30 inch king, and seven 18 inch intermediate rolls. Each stack is provided with a cooling system, oscillating doctor, and electric roll lift.

Space between the calenders has been allotted for the installation of two Champflex coaters. The two dryer drums presently installed in this area (one each will follow a coater) are

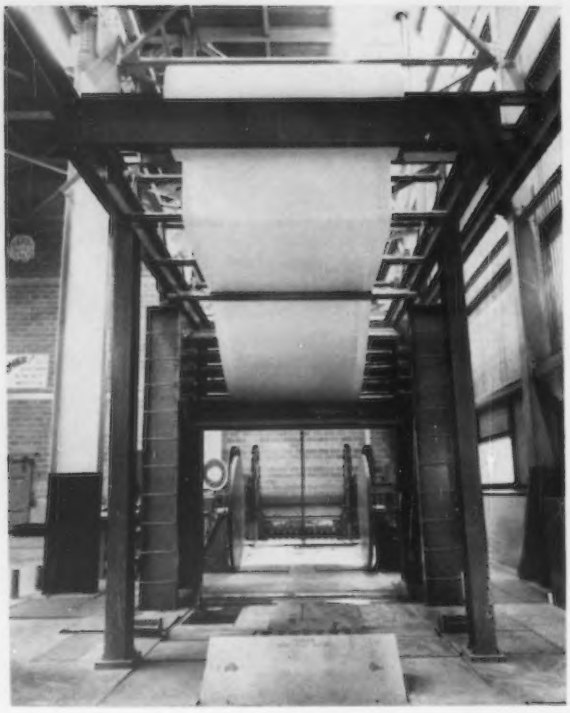
PRIMARY PRESSES ahead of the predryer section.



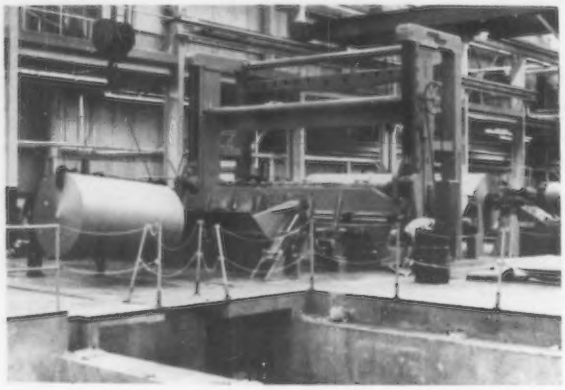
DRYER SECTION, including predryer section are completely enclosed.



NO. 2 CALENDER STACK AND REEL. Champflex coaters are being installed between the two stacks.



ROLL WRAPPER. Rolls are automatically centered, wrapped, kicked into header, and lowered into warehouse.



SLITTER-WINDER. Rewound roll of paperboard is being lowered through well where sheeter's backstand will be installed.

fitted with Beloit high velocity Air Cap dryers. This work is under way and is expected to reach completion this month.

The sheet is wound on a Beloit heavy-duty reel with 36 inch constant speed drum, capable of making a maximum roll diameter of 84 inches.

The Beloit model L slitter-winder which follows the reel is designed for a maximum speed of 4500 f.p.m. and is driven by a 400 h.p. synchronous motor and is equipped with 20-inch drums, motor driven shear type back slitters, rider roll lift, roll ejector, and shaft puller. Rolls up to 72 inches in diameter can be slit and rewound down to 9 inches width. The 20,000 c.f.m. pneumatic system conveying trim from the winder to the broke pulper is designed to handle to largest capacity ever; that is a 370 lbs/1000 sq. ft. board.

Underneath the machine a broke conveyor runs from the size press into a broke pulper situated under the coater area. The pulper is constructed of stainless steel side walls with a tile-lined vat. White water from the saveall dilutes the broke in the huge pulper as it is pumped to the broke stock chest and later combined with the stock in the refiner chest.

Lineshaft Drive

Prime mover of the lineshaft drive is a 1500 h. p. multi-stage non-condensing steam turbine operating on 900 p. s. i. steam. The line shaft operates differential gear units on the turning roll, first press, second press, each of the five dryer sections, each of the calender stacks, and reel. Each gear unit consists of inshaft, air clutch, transfer case and P. I. V. unit. A five h. p. inching drive is installed on each of the dryer sections. Helper drives, consisting of variable-speed d. c. motors are installed on the headbox rectifier rolls (a. c. motors on the secondary headbox rolls), lump breaker roll, dandy roll, couch two wire return rolls, top rolls on the first, second, and third presses, breaker stack, size press, and calender dryers. Power for the helper drive motors is supplied by a 500 kw line shaft generator.

Air Systems

The 300,000 c. f. m. capacity air processing system for the new board machine was engineered entirely by J. O. Ross. It consists basically of the following equipment: wet end makeup, roof heating and ventilating, and exhaust; and Grewin units; bottom felt supply unit; dryer hood; two calender cooling units; dry end makeup, roof heating and ventilating, and Grewin units.

The Hooper fully-enclosed hood is divided into four sections: 16 foot predryer hood; 115 foot second and third section dryer hood; 60 foot and 32 foot sections for the fourth and fifth sections respectively. The hoods are constructed of the standard insulated panels and contains 24-inch glass windows the full length of the sections.

Dewcell dewpoint automatic damper controls mounted on top of the second, third and fourth hood sections insure constant humidity within the hood. Through photo electric cells, the hood door rises automatically when there is a sheet break. When this occurs, the dampers open fully and a constant flow of air is drawn through the open doors and out the exhaust. The air makeup at the wet end is automatically filtered to exclude contaminants from depositing on the sheet. The bottom felt supply is also automatically filtered.

The Grewin systems are located on the second, third, and fourth hood sections. Air for these units is also automatically filtered.

Four man coolers are spaced along side the length of the machine on the operating floor. These units draw cooler air from the basement for the comfort of personnel standing next to them.

Additive and Coating Preparation

A factor that contributes greatly to an extra-clean machine room is the centralizaton of additive and coating preparation facilities in a separate room adjacent to the stock preparation area. Centralization has relieved the machine room of spillage and dusting by confining unloading, warehousing, trucking, bag dumping and mixing to one general area.

A blower system unloads bulk starch from hopper cars into an outside 12 by 18 foot bin. Another blower system conveys the starch into a scale hopper, which meters it into 1000 gal. starch mixer. The slurry is passed into one of two 1000 gal. tanks; one of which supplies internal sizing at the secondary machine chest, while the other supplies a starch cooker. The cooked starch is pumped to Kady mills for surface sizing. Clay slurry is unloaded from tank cars into a 20,000 gal. tank and without further treatment is added to the starch size at the Kady mixers.

Alum is pumped from tank cars into a 20,000 gal. rubber-lined tank. The alum is added to the stock at the suction side of the machine headbox fan pumps.

Seventy per cent rosin size is pumped from tank cars into a 40,000 gal. tank, emulsified to three per cent and stored in two 8,000 gal. tanks. The solution is added to the suction side of the fan pump to the secondary headbox, and on the suction side of the stock pump to the primary stock flow box.

There are twin Kady mill mixers installed, which feed into a pair of batch tanks. One Kady system supplies coating color to the Champflex coaters; the other system supplies the size press and calender stack after passing through Sweco screens.

Board Finishing

Center attraction of the still incompleted finishing area is in the big specially designed sheet-cutter and layboy. About the only equipment now installed is a roll wrapper, header-gluer and roll elevator. The installation of the remaining equipment is proceeding at a rapid rate; the finishing area is scheduled for final startup this mid-winter.

The duplex sheet cutter which will be 226 inches wide is reputed the widest in the world, and was designed and built by Clark-Aiken Co. Its main features are 220-inch single roll backstand with water cooled brake and constant auto tension control. There will be a duplex overlapping layboy with tandem delivery. The cutter is being installed in the basement of the building; rolls from the board machine's winder will be delivered to the backstand by an overhead crane through a floor well. Visual inspection of the sheet will be accomplished on the layboy. Lifts from the layboy will be automatically conveyed into palletizing and strapping operations; or if desired, they can be diverted through a bracket trimmer first. Strapped pallets will be moved to storage area, or loading docks by fork lifts. Rolls, however, will come off the board machine either at the winder or rewinder on shuttle cars. They will be kicked off and centered automatically in an S & H automatic roll wrapper. After wrapping, a header is glued on, the roll is weighed and passed onto an automatic elevator. A system of conveyors will automatically deliver the roll to the loading platform selected by the weigher.

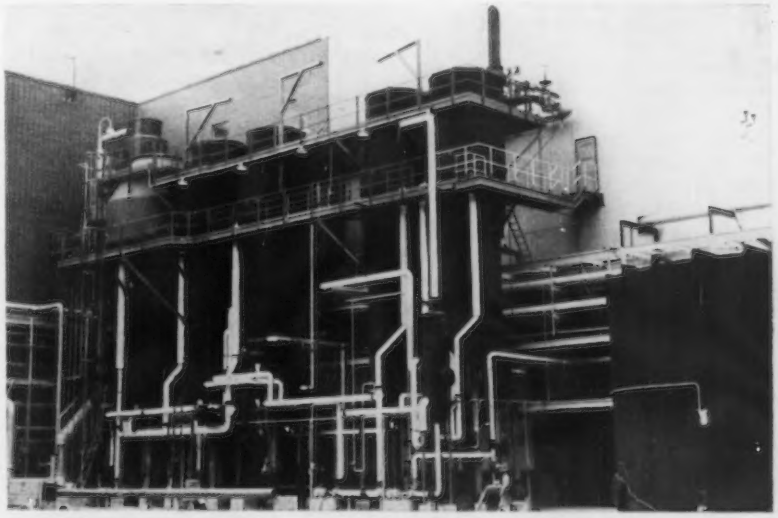
The rewinder mentioned earlier is a Cameron 82 inch type, already installed, with shaftless self unloading backstand, auto tension control, and automatic Lowerator.

Defective rolls are split by a guillotine; this broke is returned to the broke chest by conveyor.

Recovery, Chemicals and Auxiliaries

The equipment for generating power and steam for the mill's processes is contained in a separate building. Power is generated by a turbo generator, and steam is supplied by two boilers: the black liquor recovery boiler, and a combination boiler. According to Harold White, power department superintendent, the following features are significant of the power house:

- All controls for evaporation, recovery and power boilers, and turbine are centralized into one control-room.
- The turbine room, which also contains the switchgear, is pressurized. This effectively excludes dust, gases, and other contaminants.
- Remote indication of temperature and other process variables.
- Entire operation requires but five men per shift.



BLACK LIQUOR EVAPORATORS outside the power and boiler houses.

RECAUSTICIZING, CHEMICAL preparation areas. Also shown are cold soda pulp storage chest with enclosed decker on top, plus chip conveyors from silos to digester house.

• Pneumatic system conveys bark to power boiler.

• Shortened flue stacks. This is due to lying near the landing approach path to a nearby airport. A venturi cap fitted over the recovery boiler's stack effectively projects the flue gases into the atmosphere.

The portion of black liquor separated from the kraft pulp at the countercurrent washers that is not recirculated to the digester is pumped over to an outside 30 by 40 foot evaporator feed tank. This liquor contains about 12 per cent solids as it enters the five-body six effect Swanson evaporators capable of producing 310,000 lbs/hr. of concentrated liquor at 53 per cent solids. This is stored in a similar 30 by 40 foot tank. The liquor is further concentrated to 60-70 per cent solids in a cyclone evaporator prior to burning in the recovery boiler.

At the third evaporator body, the black liquor is diverted through a 30 by 20 foot skimming tank, where soap is recovered and collected in a 5 by 6 foot tank.

The liquor is burned in a Babcock & Wilcox horizontal-pass recovery boiler rated to produce 185,000 pounds of superheated steam at 900 p.s.i. and 900°F per hour. A Research-Cottrell precipitator recovers salt cake from the flue gases.

Makeup salt cake is pneumatically unloaded from rail cars through a cyclone into a tile-lined storage silo; through a pulverizer, a day tank, mix tank, and into the boiler.

The Babcock & Wilcox nine-burner power boiler produces 400,000 pounds per hour of 900 p.s.i., 900°F superheated steam. It is capable of burning a combination of gas, oil, and bark fuels. The boiler has been sized so that twice the amount of bark can be burned if the mill should expand. The present amount of bark burned averages 300,000 pounds per 24 hours. An interesting sidelight to the bark burning is that the mill is planning to install television monitors which will project the burning operation to the control room.

Mill power is supplied by a GE turbo-generator of the automatic double extracting hydrogen-cooled type. Electricity is generated at 13,800 volts at 32,000 kva. The unit has a condensor and automatic extraction at 50 p.s.i. and at 150 p.s.i. Extracted steam is desuperheated in the mill's processes. Elsewhere in the mill, steam turbines are used to power the boiler feedwater pumps and the paper machine. Condensate from the turbine, as well as from the mill's processes is collected in a separate tank and used in the deaerating feedwater heater.

White Liquor Makeup

For cooking liquor makeup, a typical Dorr-Oliver recausticizing system is employed in conjunction with a F. L. Smidth lime kiln. This equipment is all located in a separate area apart from the pulp mill and recovery plant.

The recausticizing system consists basically of primary (16 by 16 feet) and secondary (16 by 16 feet) slakers, followed by three 12 by 12 feet causticizers, and, in turn, a 40 by 24 foot white liquor clarifier. Green liquor is pumped over from the recovery boiler's dissolving tank into a 35 by 24 foot clarifier. The liquor is collected in a 36 by 28 foot tank, then pumped into the slakers. Sludge is pumped into a 20 by 24 foot dregs washer. The emerging dregs are combined with sludge from the white liquor clarifier and washed in a 45 by 24 foot lime mud washer. The lime mud is pumped to a slurry feeder and thence into a lime mud centrifuge. The lime is then conveyed into the lime kiln along with new lime makeup.

The mud flow systems from the white liquor clarifier and the lime mud washer are fully automatic, employing Accuray gauges which use Cesium as the source of radiation. Two white liquor storage tanks each with 200,000 gallons storage capacity supply a continuous flow to the digester.

The F. L. Smidth lime kiln measures eight feet in diameter and 250 feet in length, and can be fired by either gas or oil. The kiln has a forced draft fan incorporated with the air flow to the discharge end.

Chemical Preparation

The huge chemical preparation consists of the following systems:

• continuous sodium hypochlorite makeup

• caustic dilution system

• turpentine storage and loading facilities

• peroxide bleach solution makeup

• tall oil batch plant

• chlorine vaporizing and air-drying units

• chlorine dioxide generating plant

The sodium hypochlorite system is a typical continuous unit with caustic and vaporized chlorine metered into the mixing tee and mixing tank via a ORP control. The PVC-lined mixing tank is 3 feet in diameter 5½ feet high with 240 gallons capacity. The hypo solution is stored in a 10,500 gallon tile-lined tank prior to metering directly to the bleach plant. Caustic arrives at the mill in RR tank cars as a 50 per cent solution. It is first pumped through a cooler and stored in two 35,000 gal. tanks, then diluted with fresh water to 10 per cent via a conductivity cell and stored in a 4,900 gallon tank. It is this solution that is used in the hypo makeup and in the bleach plant. Caustic for the cold soda mill is further diluted in a head tank at the soaking bin.

Chlorine dioxide bleach liquor is generated according to the Mathieson process which reduces sodium chlorate with sulphuric acid and sulphur dioxide. Design capacity of the generating plant is 3 t.p.d. and has installed in it lead lined dual generators, one primary 8 foot by 8 foot (3000 gal.) reactor, 3½ foot by 11 foot secondary reactor. Chilled water is provided by a jet refrigeration unit. Waste liquor from the system is collected in a 13 foot by 11 foot tank and used as the acid solution makeup in the tall oil plant.

Peroxide bleach solution makeup follows standard practice. Hydrogen peroxide, sodium silicate, and dissolved Epsom salts are mixed into an agitated mixer. The solution is pumped over to the headbox in the cold soda mill. This system consists of a 10,000 gal. peroxide horizontal aluminum storage tank, a 15,000 gal. sodium silicate steel storage tank, a 4 foot by 4 foot stainless steel Epsom salts mixing tank, mixer, a 7½ foot by 10 foot bleach liquor storage tank, plus associated pumps and piping. The liquor is metered to the cold soda mill through a magnetic flowmeter.

The tall oil plant consists of two soap storage tanks, each of 100,000 gallon capacity which receive soap from the black liquor recovery skimming units. Tall oil is made in batches with fully automatic feeding of soap, acid, and water. Spent acid from the unit is returned to the liquor recovery process. The tall oil cooker is a steel tank lined with brick covered by a lead membrane. There is a stainless steel 7 foot by 22 foot tall oil day tank followed by a steel tile lined storage tank, 16 feet by 18 feet.

Raw Water Supply

The nearby Savannah River is the source of ConCanCo's process water. Raw water is pumped through a traveling screen before being treated in a Graver clarifier unit rated at 24 million g.p.d. Here it is subjected to flocculation, sedimentation, filtration and chlorination. Boiler water is further deaerated and purified in a Graver anion-cation exchange mineralizer.

Waste is treated in a 180 foot diameter Graver clarifier unit for solids removal followed by five ponds of 750 acres where BOD is reduced by aeration and oxidation before release to the river.

PRINCIPAL EQUIPMENT SUPPLIERS

Wood Handling

Cranes	Lorain and Lima
Barking Drum	Fibremaking Processes
Chipper	Hansel
Chip Screens	Orville-Simpson
Rotary Plate Feeders and Chip Elevator	Link-Belt
Bark Hog	Jacksonville Blow Pipe
Bark Blower	Rader Pneumatic
Log Splitter	Carthage Machine
Electromagnets	Dings Magnetic Separator
Conveyors	Link Belt, B. L. Montague

Cold Soda

Chip fractionator, chip handling, live-bottom bin, refiners, etc.	Sprout-Waldron
Turntable and conveyor	Link-Belt
Centrifugal screen and Decker	Impco
Centrifugal cleaners	Bird Machine

Kraft Pulp Mill

Continuous Cooking System	Kamyr, Inc.
Bleaching Equipment	Impco
Claflin refiner	Bolton Emerson
Washer hood	Mead
Centrifugal Screens	Impco
Vibrating screen	Link-Belt
Rejects refiner	Sprout-Waldron
Centrifugal cleaner	Bird Machine
Bleach towers	Chicago Bridge & Iron

Stock Preparation

Saveall	Impco
Refiners	E. D. Jones, Bolten
Centricleaners	Bauer Bros.
Centriscreen and Cycleans	Bird Machine
Starch handling	Sprout-Waldron
Automatic emulsifier	American Cyanamid
Metering pumps	American Cyanamid, Duriron, Lapp

Board Machine

Fan pumps	Allis-Chalmers
Centricleaners	Bauer Bros.
Deculator	Clark & Vicarro
Fourdrinier machine	Beloit
Steam turbine & Generator	General Electric
Broke pulper	E. D. Jones
Hood and ventilating system	J. O. Ross
Moisture and Dryer Drainage control	Mason-Neilan
Basis weight profiler	Foxboro

Board Finishing

Roll Handling	Williams & Wilson
Rewinder and lowerator	Cameron Machine
Sheet cutter	Clark Aiken
Trimmers	Lawson
Skid strapping	Signode

Recovery and Power House

Boiler feed water pumps	Ingersoll-Rand
Power & recovery boilers	Babcock & Wilcox
Turbo-generator	General Electric
Evaporators	Swenson Evaporator
Electrostatic precipitator	Research-Cottrell
Cyclone evaporator	Babcock & Wilcox
Bark pneumatic system	Rader Pneumatics
Salt cake pneumatic system	Fuller

Recausticizing & Lime

Causticizing System	Dorr-Oliver
Conveyors	Dorr-Oliver, Link-Belt
Lime kiln	F. L. Smidth
Lime mud centrifuge	Bird Machine

General

Tanks	Chicago Bridge & Iron
Compressors	Ingersoll-Rand
Tile Chests & Linings	Stebbins Engr.
Tank & Chest Agitation	Noble & Wood, Sandy Hill, E. D. Jones, Impco, Mixing Eqt. Co.
Instrumentation	Foxboro, Fisher Governor, Conoflow
Consistancy Regulators	Kalle, DeZurik, Fischer & Porter
Pumps	Allis-Chalmers, Viking, Buffalo, Lapp, Morris Machine, Dorr-Oliver, Nash, Peerless, Byron & Jackson
Motors & Control Centers	General Electric

Raw Water and Waste Treatment

Travelling screen	Link-Belt
Clarifiers	Graver
Filter and additive systems	Roberts

Cantilevered Roll Design On Felt Washers Improves Operation

In papermakers felt manufacture, after fulling, the felt must be thoroughly washed and rinsed to remove the fulling soap, processing oil and other accumulated impurities. However, because the felt is a long, wide endless belt, loading it onto the washer has been a difficult, time-consuming operation. Traditionally, to be worked in place between the two squeeze rolls of the customary wooden washers it was necessary that the loop be threaded over the end of one of the rolls. To do this operators had to disconnect one of the rolls, raise it by means of a chain hoist or whatever, and then progressively work the felt onto the bottom roll. Then the rolls had to be re-connected before the washing cycle could begin. After washing, the same operation was performed in reverse to remove the felt.

Huyck Felt Co. personnel felt there was a better way to do the job; and to study the problem they enlisted the help of the Rodney Hunt Machine Co. of Orange, Mass., one of the nation's oldest and best-known manufacturers of textile wet-finishing equipment.

As it happened, Rodney Hunt engineers had been studying the same problem and had designed into the company's endless felt washer, a cantilevered arm which extends out from the drive side of the tub and which will support the bottom roll when the bearing support on the load side of the bottom roll is removed. Thus, with the simple actuation of an air valve, the bottom roll sticks out into mid-air, as it were, and the operator can very simply, in a matter of minutes, thread the endless loop of felt over the end of the roll. (See Photos). The operation is quick, simple and clean in sharp contrast to the traditional methods discussed above.

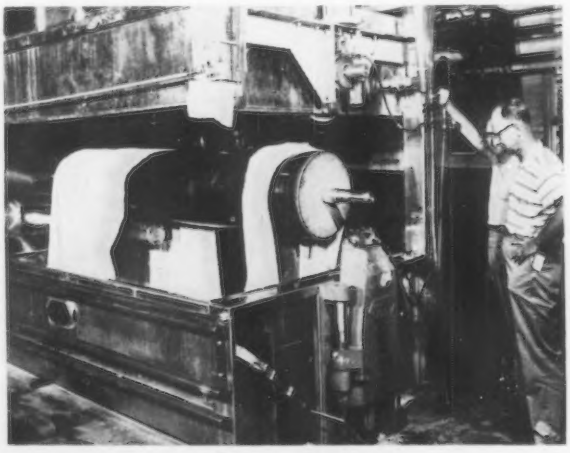
Three machines were subsequently installed, two 12-foot units and one 13 feet wide. All three washers are all stainless steel, fully enclosed construction, with vertical sliding counter-weighted doors front and rear, vented and lighted hoods and removable panels on the loading side of the machine.

In the third, or 13-foot unit, further design improvements were made in the support of the bottom squeeze roll thanks in part to significant recommendations made by Huyck engineers.

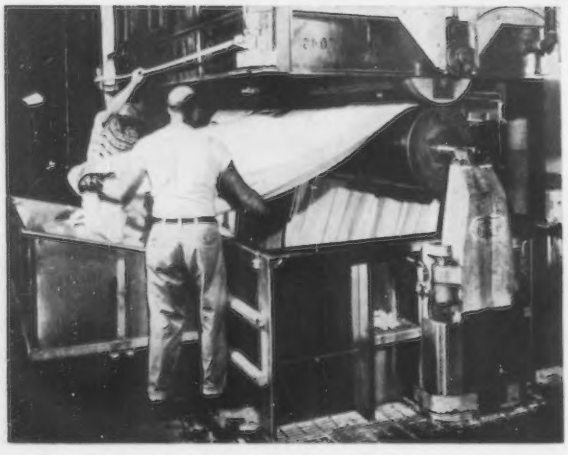
Here the cantilevered pipe supporting the bottom roll during a felt change has been eliminated and the bottom squeeze roll itself is cantilever-supported from the drive side during loading and unloading periods.

Several other significant design innovations have been made in the equipment. All three units employ the Rodney Hunt double universal-joint top-roll drive which enables Huyck to be sure that both rolls are being uniformly driven at any nip opening whether the two rolls are in contact or not. This type of drive eliminates the troubles in earlier drives which were chain and sprocket connected and used awkward spring- or weight-loaded chain tensioning idlers and resulted in noisy and non-uniform driving. One lesser design feature is the use of quick-release guide yokes at the front of the tub which serve to control and guide each felt before it enters the nip.

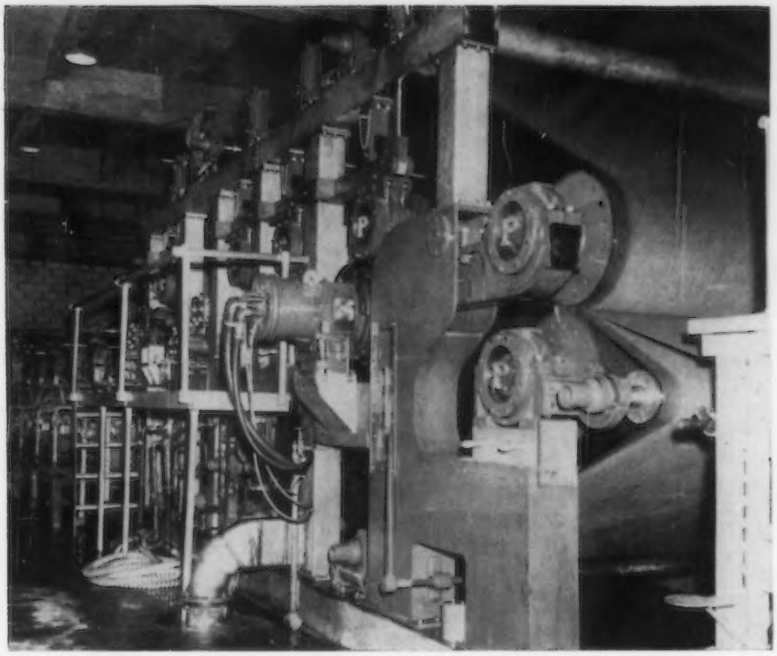
The net results were all on the positive side: less loading time representing labor savings; elimination of an inefficient production procedure; less chance of damage or staining of the felts in the loading and unloading operation; greater safety; a better, more precisely-controlled washing operation in a better quality end product felt; and less maintenance and better housekeeping by reason of the enclosed stainless steel equipment.



Air controls are engineered so that either end of the top squeeze roll may be lifted or both ends simultaneously.



Machine being unloaded. When only end of loop remains over roll, pneumatic controls will lower bearing support at right.



Press section has stainless steel framework throughout. Frame serves as vacuum line and water leg for suction primary press. Vacuum line is shown coming off frame and entering floor at lower left center.

Old Cylinder Machine Gets New Press Section at Caribbean Paperboard

One of the standout features of a recently modernized board machine at Caribbean Paperboard Corp., in Puerto Rico is a new stainless steel press section which was designed and engineered by Patton Manufacturing Co. As far as known this is the first cylinder machine wet end that has ever employed stainless steel framework throughout. All of the felt rolls, too, are stainless steel except for the worm rolls.

An unusual feature of the installation is that part of the stainless steel frame serves as a vacuum line and water leg for the suction primary press.

Unusual Cylinder Machines

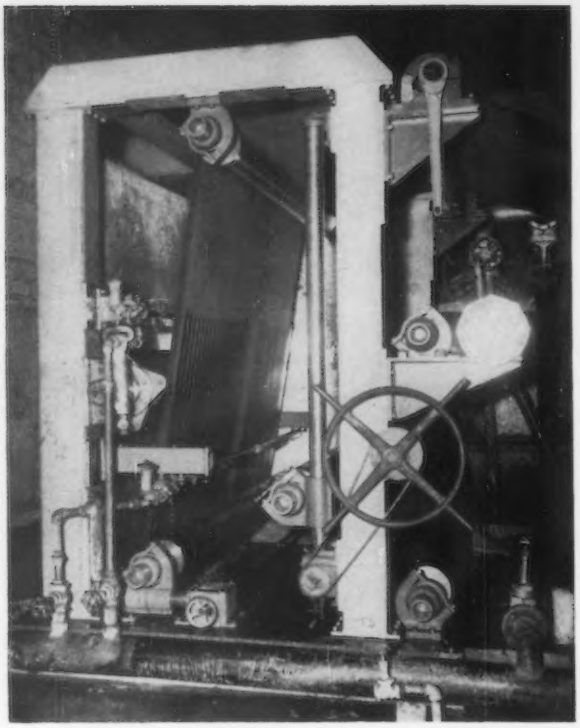
The press section includes an extractor, three primary presses, and a main press. Both the first and second primary presses have 18 inch diameter rubber covered top and bottom rolls while the third, or suction primary press has a 24 inch diameter Beloit suction roll and an 18 inch diameter top roll. The main press has two 24 inch diameter rolls.

Press loading is done by hydraulic cylinders which are controlled from

Standing in front of new press section are James Davidson, vice president and general manager; Joseph Donohoo, president; Charles Wendt, general superintendent.

instrument panels located on the wall in front of the machine. Continuous bearing inspection has been provided by enclosing front side bearings with plexi-glass covers.

The board machine on which the new Patton press section has been installed, is rather unusual in itself in that it is one of the few cylinder machines still remaining which runs the felt and cylinder molds directly toward the press section. Most run in the opposite direction. Caribbean's board machine is a 98 inch, six cylinder machine trimming 84 inches and producing mostly bogus and jute liner, some bogus nine point and some bleached manila chiefly for use in the company's own box plants.



New stainless steel tail section by Patton. Felt rolls are also of stainless except for wormed rolls.

Shipped "Piggy Back"

The equipment for the new press section installation was shipped to the mill by a novel method employing "piggy-back" trailers. These units were loaded in Patton's shops in Springfield, Ohio, but none of the equipment was boxed for export. It was merely rigged in the trailer bodies without any boxes other than for rolls. The trailers were then trucked to Newark, N. J., where the trailer bodies were lifted intact onto the ship. On reaching their destination, San Juan, Puerto Rico, the bodies were lifted out of the ship, placed on a trailer bed and trucked directly to the Caribbean Paperboard Mill. According to Pan-Atlantic Steamship Corp., whose system this is, it is quite probably the first time that this revolutionary method has been employed for the shipment of paper mill machinery.

PJT NEW LITERATURE

Custom Alloy Steel Castings

Contains technical data regarding heat, corrosion, and abrasion resistant alloy steels. Charts listing nearly half of the more than 100 available cast alloys; descriptions of ESCO's services and casting methods. Valuable to the process and manufacturing industries interested in low and high alloy and stainless steel castings. Catalog. ESCO Corp., 2141 N. W. 25th Ave., Portland 10, Ore.

Lincoln Models 1142 and 1169 Lever Guns

Describes both models. Model 1169 is set to handle lube cartridges and Model 1142 is set to dispense bulk grease. By merely flipping the follower to the correct position either gun is capable of handling cartridges or bulk grease. Both models feature three-way reloading (cartridge, from filler pump or by suction) and high-pressure operation (up to 10,000 p.s.i. grease pressure). Bulletin, Lincoln Engineering Co., 4010 Goodfellow Blvd., St. Louis 20, Mo.

Water Clarification

Discusses the chemistry of coagulation applied to effective water treatment in municipal and industrial plants, practical approaches to problems, and solutions. Application of sodium aluminates; refined montmorillonites; cationic, anionic and non-ionic polymers; and a new concept of "Inline Clarification." Bulletin A-1 8 pp. Nalco Chemical Co., 6216 W. 66th Place, Chicago 38, Ill.

Vibro-Energy Separator

Publication of a series of case histories showing how screening problems in the forest product and other process industries can be solved. Describes how processors have increased production rates, improved separation efficiency, reduced operating costs and upgraded their products. Also the latest SWECO Separator Catalog is available. Southwestern Engineering Co., Dept. 446, 4800 Sante Fe Avenue, Los Angeles 58, Calif.

Caterpillar 922 Series A Traxcavator

Gives engineering details which assure quick response performance, operator safety and convenience, and greater ease of servicing and versatility. Features extra long bucket reach to spot loads fast and easily, choice of diesel or gasoline engine to fit any job, stable design, low operating costs. 12 pp Booklet, No. 34004. Advertising Div., Caterpillar Tractor Co., Peoria, Ill.

How to Remove or Prevent Rust

Tells how industry can save millions of dollars each year with proven methods of removing rust from raw stock, removing in one operation, preventing rust while parts are being processed and prepared for painting. Bulletin 16B. Oakite Products, Inc., 148 Rector St., New York 6, N. Y.

Steam Temperature Control

Describes the operation and accurate control of high steam temperatures. Three detailed diagrams explain principle of desuperheater water control, and burner tilt and desuperheater water control. Also, curves showing the effects. Bulletin 543, Bailey Meter Co., 1050 Ivanhoe Road, Cleveland 10, Ohio.

Some Tips on the Maintenance Of Centrifugal Pulp Screens

The changing of screen plates consumes the most maintenance time, says the author, but there are many other items which must be included in a weekly inspection. He also includes a list of recommended spare parts.

Farrell B. Johnson,
Vice President, Sales,
Montague Machine Co.,
Turner's Falls, Mass.

The design of the centrifugal screen falls into the class of pulp screen that has a rotating element and free discharges for the accepted stock and tailings. For successful operation, two factors, which coincidentally bear a relation to maintenance, must be borne in mind. One is the provision of a sufficient operating head from the centerline of the screen to insure a full inlet elbow at all times. It is also important that a free discharge be provided for accepted stock and tailings.

Screens may be built either right-handed or left-handed. In cases where change of location in a mill might require a change of hand, it may be accomplished very simply. Unbolt the screen from the base, lift it up and turn it around. Dowels can be provided for aligning the equipment precisely.

Components can be furnished to suit the type of pulp to be screened, in stainless steel throughout, except the drives and motors, with the framework in Ni-Resist alloy to resist corrosion and abrasion in combination with stainless steel rotor and in plain cast iron with fabricated steel rotor. Lithcoting of surfaces in contact with the stock can be used where considered desirable.

Following are some notes on important aspects of centrifugal screen maintenance. There is also a table included which lists spare parts that should be carried in stock.

• The largest maintenance item is the changing of screen plates but, after becoming familiar with the operation, it requires only a few hours. Plates are riveted to the frames and the secret is to start riveting at the center, then out towards both ends to insure a smooth fit.

Screen plates are furnished in stainless steel, in Monel metal, in plain copper or plain copper Lithcoted and in fabricated steel for board pulp. In selecting material for screen plates, service life is always kept in mind. Proper spacing of perforations is important.

Screen plates should be inspected weekly for wear and fracture. When the screen is down for this inspection the plates should be cleaned of any coarse pulp and tailings that may be lodged in the perforations. Access to the screen plates is by quick and easy removal of the side covers.

• A removable cover on the dilution elbow provides a clear visual access to the screen rotor. A peek at any time with the aid of a flashlight would also quickly determine whether the shower openings were open and free.

When the screen is opened for the weekly inspection the hollow dilution shaft should be checked also to insure that shower water openings are thoroughly open and free and any material found in the hollow shaft should of course be removed. Inspection cover on the dilution elbow facilitates this weekly check.

• Very rarely the rotor vanes are damaged when any foreign object accidentally gets into the system. Except in the case of bronze rotors, such damage can be repaired and the rotor restored in the manufacturer's shop.

• Matched "V" Belts should be used for the drive and they should be checked periodically for possible stretching because any slippage may reduce the capacity of the screen.

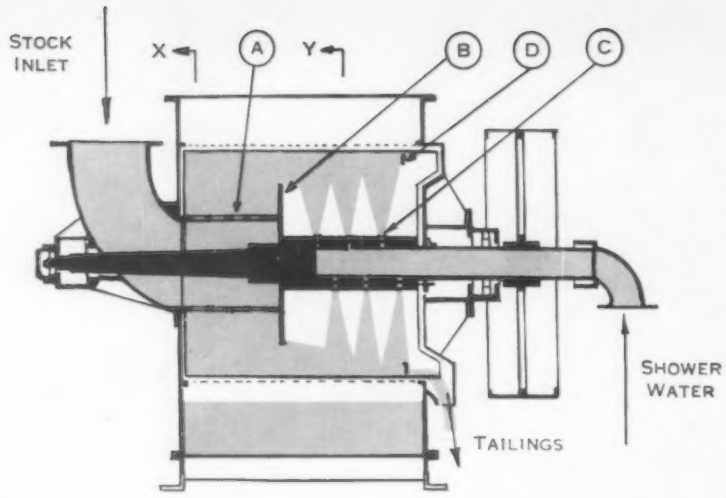
Recommended Spare Parts Required Per Screen

Number of Screens	1	3	5	8	15
Bearings, inlet end	1	1	1	2	2
drive end	1	1	1	2	2
Hand screw fasteners & clamp	2	2	5	8	15
Packing, ⅜-inch sq. flax (boxes)	1	2	2	3	4
Rotor assemblies	0	0	1	1	1
Screen plates	3	6	6	9	12
Screen plate frames	3	3	6	6	9

• Anti-friction bearings which support the rotor shaft are packed with grease before each screen is shipped and this grease should be renewed every six months or so. If it is known that the bearings have been wetted, they should be regreased as quickly as possible.

• Packings, including the packing ring which seals the screen plates, should be examined also during the weekly inspection. Signs of leakage should be checked and the packing replaced when required. Packings should not be tightened beyond that required to prevent leakage. Do not pull up the gland to stop leaks when new packing is required as this causes wear on the shafts.

• Side covers are furnished either in aluminum or stainless steel. They are anchored in position by drop-forged stainless thumb nuts which last longer than those previously made in manganese-bronze.



How the centrifugal screen (Cowan type) works: suspension leaves barrel through holes marked "A"; white or fresh water from holes "C" in hollow shaft dilutes the thickening suspension as it passes around baffle "B" and washes the good fiber through the plates. Baffle "D" acts as a dam to increase the centrifugal pressure. Tailings discharge past the end of rotor blades.

Stainless Casting Finds Place In SO_2 Line

Engineers at the Weyerhaeuser Co. sulphite plant in Everett, Wash., were faced with a problem: How could they increase service life of two sulphur dioxide headers without a major (and costly) revision in construction? Each 30-inch diameter header carries hot, corrosive SO_2 gas from a sulphur burner building to an outdoor cooling pond. Originally made of high chromium cast iron, sections of the header assembly had to be replaced every 2-2½ years. Weyerhaeuser engineers agreed that replacement with cast stainless sections would be the best solution—if the resulting service life would be long enough to justify the higher initial cost.

To test this concept, a 90-degree flanged elbow (Fig. 2) was replaced with a similar section of type HH (Alloy Casting Institute designation) cast stainless alloy. Results: (1) The cast stainless elbow, installed over 15 years ago, is still in operation; (2) based on this favorable result, both headers are being completely replaced, section by section, with type HH alloy castings.

The header assembly is made up of individual cast sections including elbows, a "T" manifold, and numerous straight and reducing sections. Cast into the bottom of the sections making up the distributor portion of the header are flanged outlets which permit the SO_2 gas to flow into the cooling pond piping. To ensure continuous operation, while allowing for routine maintenance, two sulphur burners are in alternate service for several years at a time; the header from the out-of-service burner is normally disconnected from the distributor portion.

In service, the atmosphere in the header is 17 per cent SO_2 and at a mean temperature of 2280° F. (1250° C.). Metal temperatures average from 1800 to 2000° F., depending on location in the header. To resist this environment, the iron-chromium-nickel cast alloy type HH was selected for the header sections. In addition to its high temperature strength, type HH alloy (25 per cent chromium, 12 per cent nickel) is known for its resistance to sulphur-bearing gases under oxidizing conditions.

More than two-thirds of the sections used in the header assemblies have now been replaced with stainless castings. Of these sections, probably the most critical is the important "T" manifold. The "T" section is 58 inches high with an inside diameter of 30 inches. Weight of this complex casting is approximately 2700 pounds. Since the "T" serves both headers, it receives full service regardless of which sulphur burner is in use.

Although cast stainless has been used in many critical stages of sulphite pulping, Weyerhaeuser engineers believe this was the first time it had been used in header assemblies.

The same successful performance resulting from the use of the cast stainless elbow is anticipated for the other sections of the header that have been replaced. As yet, there is no final quantitative answer to service life, since the elbow installed 15 years ago is still in use.

How Publisher's Paper Handles And Measures Residue Chips

J. S. Hensel,
Forest Engineer,
American Pulpwood Ass'n.

At the Publisher's Paper Co. in Oregon City, Ore., chips are received in both truck vans and rail cars as residues from a rather large number of saw mills and plywood plants.

Truck chips are received in van-type trailer units. Loads vary from 8-12 units (200 cu. ft. per unit) depending upon truck size, length, and state highway load restrictions. Loads are covered with a canvas canopy to prevent loss in transit.

FIGURE 1: ELECTRIC HOIST mounted atop a four-legged tower unloads truck vans of chips.

FIGURE 2: SWIVEL PIPE and pneumatic nozzle used to unload rail chip cars.

Unloaded at Mill

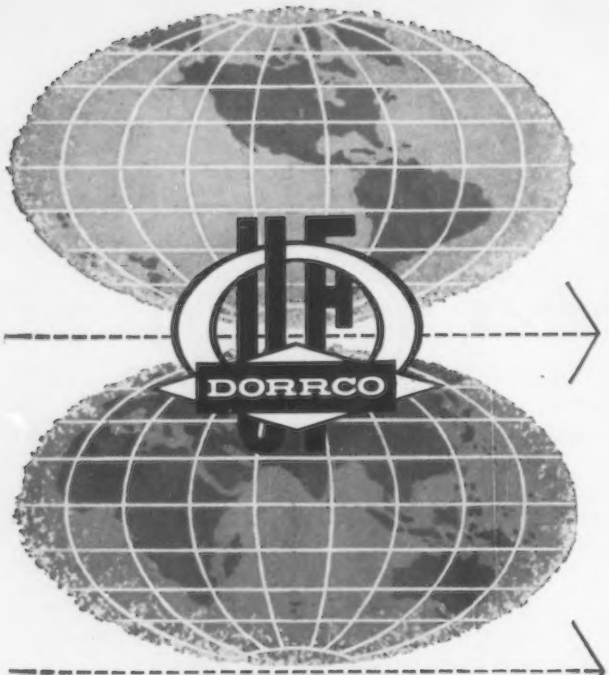
At the mill, trucks are weighed fully-loaded, then emptied, and re-weighed in order to determine the net gross weight of the chip load. Unloading is accomplished by an electric hoist mounted on a four-legged tower, as shown in Figure 1. The front end of the van is lifted and the chips pour out of the rear end into a round hopper with a turntable at the bottom. The turntable feeds the chips on a conveyor belt, which leads to a blower. The chips are then pneumatically conveyed either to outside storage or directly to the chip silos.

Rail chips are received in open-top, bottom-dump rail chip cars. The majority are converted gondolas; however, the Southern Pacific Railroad has recently put into service 500 50-ft. steel chip cars and are now constructing an additional 400 cars of 65-ft. length. The 50-ft. cars have a 4,590 cu. ft. capacity (approximately 22.95 chip units) and the 65-ft. cars will have a 6,014 cu. ft. capacity (approximately 30.07 chip units. These cars are designed solely for chip transport and are furnished by the Southern Pacific Railroad. Chips are unloaded pneumatically either to outside storage or directly into the system.

FIGURE 3: PNEUMATIC SYSTEM employed for stockpiling chips. One pipe conveys chips from truck dump to cyclone to pile, while second pipe leads from rail car pneumatic unloader.

Sampling and Measurement

Chip samples are obtained manually from truck deliveries. Five different samples from different levels are taken from each load. Samples from rail cars are obtained mechanically, through remote push-button control, by the unloading operator. A minimum of five samples



1960 has been a year of significant technical gain and measurable improvement in overall incoming business volume. In technology, a selective concentration of our development effort has begun to show results. Some of these new units and processes currently being marketed are mentioned below. Others, several of which show considerable commercial as well as technical promise, are nearing fruition and should be available during 1961. Progress in basic product standardization and redesign has also played a significant part in our technical advance and will have a substantial effect on our ability to serve our customers.

Virtually every segment of our worldwide operations has contributed to the increased volume of new business with an unusual degree of activity on exceptionally large projects apparent in many areas of the world. This overall gain has been reflected in somewhat higher billings and profits but a substantial increase in backlog has been the primary result.

METALLURGICAL—During the past year, the first installation of the new Dorr-Oliver DSM Heavy Media System went into operation on iron ore beneficiation in Minnesota. This process utilizes a DorrClone unit as the heavy media separatory vessel and other newly developed D-O units in the media cleaning circuit. As compared with conventional practice the new system provides better media cleaning, improved recovery and grade of ore and sharply reduces magnetite losses.

Included in the flowsheet is the D-O SiphonSizer, a hydraulic classifier operating on the hindered settling principle. In limited use for several years, this unit is now being applied in the metallurgical and non-metallics fields on both a commercial and experimental basis where sharper classification is of benefit.

For water conservation, one of the largest center pier Dorr Thickeners to be built in recent years is soon to go into operation for a major copper producer. Overall diameter of this unit is 375 feet.

NON-METALLICS—The continued installation of varied D-O equipment in wet process cement plants throughout the world has reflected the expansion of this industry, particularly in South America. It is interesting to note that in this latter area several Dorr Slurry Mixers in the 100 foot dia. range are being installed. These are among the largest ever fabricated.

A new development of significance in the cement industry was the introduction of the 270° DSM Screen —a unit which has increased grinding mill capacity when used for closed-circuiting or scalping. Considerable operating experience is available from several installations in Australia and Europe.

Substantial flowsheet improvement in phosphate rock beneficiation and coal washing has resulted from the application of sharper classification in Dorrco Hydroscillators and Sizers. The Oliver Horizontal Filter and the Dorrco FluoSolids System have been successfully operated in combination.

FOOD & PHARMACEUTICAL—In food and pharmaceutical industries, highly efficient separations coupled with economies in operating costs and space continue to attract processors to Dorr-Oliver centrifugal equipment. In the starch industry, for example, Merco Centrifuges, Mercone Screening Centrifuges and DorrClone Systems were selected in various combinations for expansions, modernizations and new plant facilities in Argentina, Mexico, the Philippines, South Africa, Uruguay and the United States.

Food processors also discovered the advantages of the DSM Screen and began to apply them to various dewatering jobs, such as germ separation, fibre washing and pulp removal from waste process waters. A new rotary vacuum filter of plastic construction, with interesting cost savings over stainless steel, performed well on clarification of fruit juices. Small diameter DorrClones in porcelain construction also solved speck and seed removal problems in various juice lines.

A leading manufacturer of new, high protein products for food and industrial use has utilized D-O equipment and services in developing new, continuous processes.

CHEMICAL—The versatile Oliver Horizontal Filter was applied to the washing and dewatering of a number of granular chemical products. A major breakthrough in the thermal drying of nitrocellulose by a special design of the Oliver Horizontal Filter resulted in substantial reduction in operating costs with a significant advance in safety. A multiple and repeat installation

of Horizontal Filters for phosphoric acid production was ordered late in 1960 from a major producer.

The newer unit operation of centrifugation continued to prove its potential in the field. Typical examples of its application are the successful use of Mercone and DorrClone units for carbon removal from paraffin oil and of a Merco Centrifuge for the removal of impurities from phosphorus.

PETROLEUM & PETROCHEMICALS—A new development of importance during 1960 was the application of the Mercone Centrifuge to the removal of liquids from polymer crumbs. One of the most exciting developments was the success of a special 'clamshell' DorrClone for catalyst removal from cat-cracker-fractionator bottoms. This solves a long standing refinery problem and should have wide application.

The Synrub filter is still an accepted standard in the processing of synthetic rubber both in the United States and elsewhere in the world. As an example, South America's first synthetic rubber plant, which was built during the year in Brazil employed a multiple D-O Synrub filter installation.

In the field of petroleum production, a principal D-O activity continued to be the use of DorrClone desanding and degritting units in water injection and drill mud conditioning. These are also now being applied to degritting of crudes.

The high demand for paraxylene has been partially solved by the application of a Merco Centrifuge separating paraxylene from a xylene stream at —80° F. Higher recoveries are achieved than ever before.

PULP & PAPER—The continuing increase in paper demand in every part of the world has resulted in the sale of brownstock washing, recausticizing and pulp bleaching systems both in the United States and abroad. Filters, pumps and sedimentation equipment have also been in demand for both pulp processing and such accessory services as water and waste treatment.

A significant advance in pulp bleaching by chlorine dioxide, the D-O concentric bleaching tower was made available broadly to the industry this year. The first of these towers has completed a year of highly successful operation in Idaho; the second will be in operation early this year.

Close cooperation and attention resulted in the supply of substantially all equipment for additional brownstock washing and bleaching sections at the newest mill in the Northwest.

MUNICIPAL AND INDUSTRIAL WASTE TREATMENT—Interest was extremely high in activated sludge treatment and applicable new D-O developments continued to gain momentum. The D-O Aerator was applied to the treatment of combined strong domestic and industrial wastes in municipal plants. Late in the year, the D-O Inka Aerator was introduced. Developed in Sweden and widely used in Europe, it combines high oxygen absorption rates with low power requirements and can be used most effectively on low BOD waste.

Programs conducted in the field on Densludge thickening and digestion were reported in detail during the year. One major city expects to save $6,000,000 in its current plant construction program through the use of this technique. In another interesting application, the Sultzer Disintegrator has improved digester performance in one large municipal plant when used to grind the thickened sludge.

Successful demonstrations of the RSR Clarifier proved the efficiency of this new unit for separating high volatile return sludge from waste sludge. Also, the use of the SpiroVortex System for the activated sludge process was further exemplified by a new installation in California.

In the area of sewage sludge dewatering, Dorr-Oliver Plastic Filters proved successful at Westport, Conn., and Paw Paw, Mich., while new filters of conventional design were installed at Harrisburg, Penna., and Marshall, Miss.

WATER TREATMENT—An outstanding event of the year in water treatment was the completion of the five-year construction program at Philadelphia's ultra-modern 423 mgd Torresdale plant for which D-O supplied four Dorrco Flocculators, and four Dorr Squarex Clarifiers. Another outstanding municipal water treatment plant is under construction by the Metropolitan Water District of Southern California. This plant will incorporate sixteen Dorr Squarex Clarifiers.

In the area of recent developments, a new Dorrco PeriFilter System will shortly go into operation at a southern city to treat 4.0 million gallons a day, and successful pilot plant demonstrations of an improved lime sludge handling method were carried out in several mid western cities. An increasing number of DorrClone units for desanding well water are being installed to protect meters and valves in industrial and municipal water supply systems.

Worldwide activity in new industrial plant construction, particularly in the pulp and paper field, has resulted in much activity in the application of both Hydro-Treators and conventional pre-treatment units to industrial water treatment.

PROJECT ENGINEERING — Much of the activity in this sector of D-O operations was provided by the rapidly expanding fertilizer industry. This included plants for the beneficiation of phosphate rock and for the production of phosphoric acid, ammonium phosphate, triple superphosphate and complete granular fertilizers. Typical of this area of activity are two phosphoric acid plants now being designed by D-O in Florida on a turnkey basis. A plant of unusual interest is being designed to recover ilmenite from heavy, mineral bearing sands for the ultimate production of titanium. D-O engineering includes the processing equipment, all auxiliary facilities and structures.

Other engineering projects include beneficiation of iron and copper ores, recovery of copper scrap, and facilities in such diverse fields as the pulp and paper industry, nitrocellulose manufacture, and starch production. Geographically, projects are underway in Africa, Brazil, England, France, Germany, India, Ireland, Japan, Jordan, Mexico and Yugoslavia as well as the United States.

FLUOSOLIDS SYSTEMS—1960 was a year of unusual activity involving both new and thoroughly demonstrated applications of fluid techniques. Plants for drying fine coal and both the drying and calcination of varied metallic and non-metallic ores continue to be in demand and contributed substantially to overall volume.

In the realm of the new and unusual—an important plastics plant went into production during the year utilizing a Dorrco FluoSolids System to dry the product Other similar applications are in the development stage. Another unusual application involving the roasting of copper concentrates for partial removal of sulphur prior to smelting will go into operation early in 1961. Also in 1960 a major chemical manufacturer ordered a third FluoSolids Reactor for processing food additives.

Of particular interest is a 200 ton per day lime plant scheduled for completion in mid 1961 in Florida. It is being completely designed and engineered by D-O on a turnkey basis with FluoSolids Reactors utilized in both the key steps of limestone drying and calcination.

SUGAR—Two new D-O developments were introduced to the Cane Sugar industry during 1960.

The D-O Rapi-Floc System introduces a controlled flocculation step before filtering of cane mud on a modified Oliver-Campbell Filter. The second development involved the application of DSM Screens to juice screening, with improved clarification and filtration reported as a result.

Throughout the year there has been a continuing demand for RapiDorr Clarifiers, Oliver-Campbell Filters and other standard Dorr-Oliver equipment for both new and expanded cane sugar mills, with the Middle East, Far East, Africa and Latin America particularly active.

We have several challenges ahead. We must provide our customers with even greater technical competence and service. We must continue to improve our profit structure to provide the income we need for continued technical and corporate growth in the future. We must provide growth and stability by adding to our product lines and areas of activity.

Through the dedicated efforts of our staff around the world we have made substantial progress in these areas during the past year. I am confident that this progress will continue and accelerate in the months ahead.

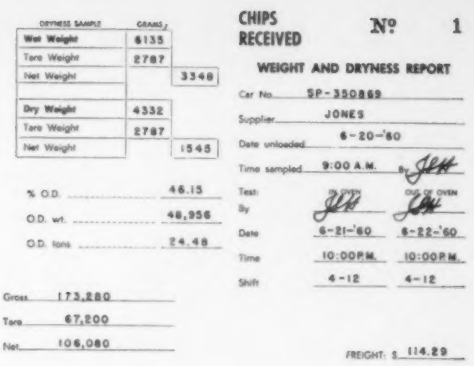
L. R. BOLING
President

December 1, 1960

at varying depths, is taken from each car. The samples are oven-dried over a 24-hour period to an absolute zero-moisture content.

Over a one-year period, using the following species, western hemlock, white fir, noble fir, Sitka spruce and Engelmann spruce, oven-dry weights have ranged from 2000-2400 lbs. per 200 cu. ft. chip unit. Variations are attributed to mixtures of species, and to compaction as a result of differences in methods of loading. Payment for chips are made on the basis of an oven-dry ton.

Figure 4, a photocopy of an original receipt, indicates the data which is obtained for each truck or rail delivery of chips. The weight and dryness report (Figure 4) is made out in triplicate. The original and second copy are for intra-company use, while the first carbon is given to the producer for his records. A scale card is made out in duplicate with the original going to the producer and with the carbon copy being used within the company.



DRYNESS SAMPLE	GRAMS	
Wet Weight	6135	
Tare Weight	2787	
Net Weight		3348
Dry Weight	4332	
Tare Weight	2787	
Net Weight		1545

% O.D. 46.15
O.D. wt. 48,956
O.D. tons 24.48

Gross 173,280
Tare 67,200
Net 106,080

CHIPS RECEIVED Nº 1

WEIGHT AND DRYNESS REPORT

Car No. SP-350869
Supplier JONES
Date unloaded 6-20-'60
Time sampled 9:00 A.M. By JHH
Test: By JHH
Date 6-21-'60
Time 10:00P.M.
Shift 4-12
OVEN DRYNESS: JHH
Date 6-22-'60
Time 10:00P.M.
Shift 4-12

FREIGHT: $ 114.29

FIGURE 4. CHIP WEIGHT AND DRYNESS RECEIPT

Chip Specifications

Publisher's Paper specifies that all chips must be made from acceptable species, of sound wood, and must be free from bark, burned, or charred material and substantially free of sawdust, cards, needles, and other objectionable material.

Chip sizes, measured from cut to cut, with the grain, are required to have a weighted average length of 11/16 inch. Distribution of chip sizes, as determined by the hand sorting method is designated as follows:

Chip Length	Percentage
over 1½ inches	0.5 % max.
1 to 1½ inches	6 % max.
½ to 1 inch	80 % max.
¼ to ½ inch	15 % max.
under ¼ inch	3 % max.
sawdust	0.6 % max.

Chip ends are required to be clean cut with a minimum of breaking and bruising.

Chip quality is determined by the accepted use of frequent sampling —about 20-25 per cent—using a 6-tray chip classifier and manual sort for bark, char, etc.

The average oven-dry weight of about 45 per cent developed over a large volume of chips ties in well with other industrial chip weights obtained for the species used.

Based on Technical Release No. 60-R46, issued by the American Pulpwood Association.

Modern Methods of Mechanical Pulp Manufacture

This book comprehensively covers all aspects of groundwood pulp production. The author K. H. Klemm, has a broad knowledge of groundwood manufacturing methods and has been associated with groundwood mills on both sides of the Atlantic. Price: $5.00.

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Another example of "Virginia" nationwide technical service

"We can get 77 points with one peroxide stage
...but costs sometimes hit $25 a ton...
we are considering a second stage of hydro
...send a technical representative."

Fortified with facts and field experience, a "Virginia" technical representative called on this paper mill. After a careful analysis of the entire operation, he sat down with the management to thrash the problem out.

The big trouble was they had reached the flat point in the brightness-concentration curve of the peroxide. To pick up one brightness point they were using an extra 1% of peroxide and paying a premium of around $4. Our man pointed out that at the same cost they could pick up five brightness points by means of a second stage of zinc hydrosulfite. The mill agreed to a trial and equipment was brought in for the second stage. The mill paid for nothing but the actual hydro used. The results proved highly satisfactory, the pulp attaining a degree of brightness that put the mill in a very advantageous competitive position.

If you wish the facts on 2-stage bleaching of groundwood pulp, using hydro for the second stage, wire, phone or write us. We will send data—or, if you prefer, a top-notch "Virginia" technical man. Industrial Division, VIRGINIA SMELTING COMPANY, Dept. 298, West Norfolk, Va.

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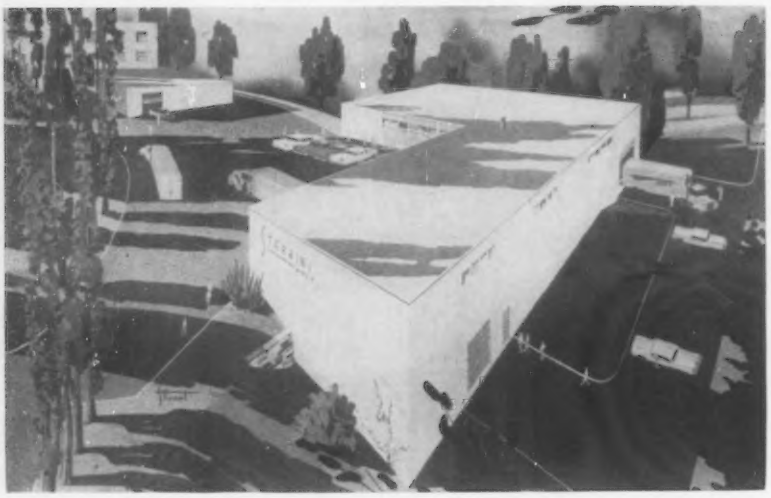

Stebbins Engineering and Manufacturing Co., Watertown, N. Y., announces that a new laboratory and facilities for processing special acid-resisting compounds are now under construction adjacent to its main building. The reinforced concrete, steel and cement block structure will contain approximately 15,000 square feet of floor space on two floors.

According to E. F. Tucker, president, the building is expected to be completely enclosed before Christmas and partially occupied in the spring of 1961. This is the third major expansion for Stebbins at the Watertown site since erection of the main building in 1937.

Stanley Steel Strapping, division of The Stanley Works, New Britain, Conn., has appointed Richard J. Rebillard sales representative in eastern Ohio. He has had intensive training in the factory and in the field.

A native of Torrington, Conn., he attended public schools in Litchfield, Conn., and later Dean Academy in Franklin, Mass. He was graduated in 1958 from Ohio Wesleyan University, Delaware, Ohio, with a B.A. degree in business administration.

Castle & Overton, Inc., takes pleasure in announcing the appointment of Patrick N. Barrett as a vice president and director. He has also been appointed vice president and director of Castle & Overton Paper Corp.

Mr. Barrett has been with Castle & Overton, Inc., since 1935 except for a brief period in the early fifties and has served as secretary of the company since early in 1959.

John W. Bolton & Sons, Inc., Lawrence, Mass., and the Paper Industry Management Ass'n., Chicago, Ill., co-sponsors, announce that "Privileges of the Free Enterprise System" is the subject of the 1961 Bolton Award Essay Contest.

This is the 14th in a series of annual essay contests on subjects of timely significance to all members of industry. The contest is open to all persons engaged in the pulp, paper and paper converting industry in the United States and Canada. The contest period extends from January 1, until midnight March 31.

Sponsors of the Bolton Award stress that ideas, not writing skill, are of paramount importance in determining the winning essays. Contestants may be as broad in scope or specific as desired in their interpretation of their "Privileges."

Ten grand cash prizes will be awarded—First prize, $1000; second prize, $750; third prize, $500; and seven prizes of $200 each.

Contestants should submit their papers typed with double spacing on one side only on plain sheets, 8½ by 11 inches. Papers should be confined to 1500 words. Cover sheets **only** should include the author's name, home address, job title and name and address of the mill.

All entries must be postmarked before midnight March 31, 1961, and mailed to the secretary and treasurer, Paper Industry Management Ass'n., 10 North Clark Street, Chicago 2, Ill.

Ciba Co.—Allen M. Mulder has joined Ciba Co., Inc. as a sales representative in the company's midwestern district office it was announced by William H. Kieffer, general sales manager.

Mr. Mulder will sell Ciba dyes and chemical specialties to the paper industry in the Michigan area.

A graduate of Kalamazoo College in 1947 with a B. A. degree in economics, Mr. Mulder served in the U.S.A.F. during World War II.

Prior to joining Ciba Co., Mr. Mulder was associated with Allied Paper Corp. as a mill manager. He has also worked as plant manager for Industrial Container and Paper Corp., production supervisor for Sherman Paper Products and assistant to the manager of the St. Regis Paper Corp. plant in Kalamazoo.

A. M. Mulder

J. R. Simpson

Conoflow Corp., Philadelphia, Pa., has elected J. Robert Simpson, general sales manager.

After completing his mechanical engineering studies at Lehigh University, Mr. Simpson joined a major instrument manufacturer for five years. He served as a U. S. Naval aviator during World War II, joining Conoflow shortly after completing his tour of duty.

Mr. Simpson spent five years as a sales engineer working out of Conoflow's Philadelphia office and then moved to Chicago to take over the marketing of the company's products in that area. In 1957 he returned to Philadelphia to assume the post of general sales manager for Conoflow.

Penick & Ford, Ltd., announces the appointment of Raymond I. Bashford, Jr., to the position of manager, technical sales service and field development, Paper Division, Cedar Rapids, Iowa. Until recently, Dr. Bashford was located at Dayton, Ohio, as Penick & Ford's papermill representative in the central district.

A graduate of Syracuse University, Dr. Bashford was with E. I. Dupont de Nemours until 1958 when he joined Penick & Ford.

R. F. Bashford

N. M. Draper

Allied Chemical Corp. announces appointment of Neal M. Draper as vice president of its National Aniline Division. Mr. Draper will be responsible for the sale of National Aniline Organic Chemicals, and Dyestuffs and Pigments.

Mr. Draper joined Allied Chemical's Solvay Process Division in 1935 as a student salesman. In 1947, Mr. Draper was promoted to branch manager, St. Louis. Transferred to New York in 1951 as product manager — Ammonium and Potassium products, he became assistant director of sales for Solvay Process Division in 1954. In July, 1957, Mr. Draper was promoted to the position of assistant to the president of National Aniline Division.

Stadler Hurter International, Ltd., consulting engineers of Montreal, have made an agreement with ScandiaConsult, a large Swedish combine of consulting engineers with head offices in Stockholm.

Under this agreement ScandiaConsult will represent Stadler Hurter International, Ltd., in Scandinavia and the two firms will work jointly on pulp and paper projects in Scandinavia. Stadler Hurter will carry out the preparation of process calculations, process flow sheets, plant layouts, mechanical design of process elements, and design of process piping. ScandiaConsult will carry out the structural design and architectural features, water supply and civil works, electric power distribution, heating, ventilating, and plant services. The offices of ScandiaConsult are located at Ostermalmsgatan 45, Fack, Stockholm.

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Bleached Gw'd.	$ 97.50/100.00	$97.50/100.00			
Kraft, Blchd.	‡135.00/150.00	140.00/150.00			§$157.50/ —
Kraft, Blchd. Hdwd.	135.00/140.00		140.00/ —		
Kraft, Semi-bleached.	130.00/140.00				
Kraft, Unbl.	117.50/125.00	125.00/ —	†125.00/130.00	125.00/ —	
Sulphite, Blchd.	135.00/140.00	135.00/140.00	*155.00/ —	*155.00/ —	155.00/ —
Sulphite, Bl. Hdwd.	135.00/ —				
Sulphite, Unblchd.	125.00/ —	125.00/ —	†125.00/ —	*125.00/ —	
Sulphite, Unb'l. Gl'sn.		140.00/ —	†134.00/ —		
Soda, Blchd.	130.00/135.00	130.00/135.00			

§ On Dock Atlantic Ports. * Freight allowed. † Varying Freight Allowances.
‡ Depending on Brightness.

COTTON LINTERS

F.O.B. OIL MILLS

WEEK ENDED JANUARY 3

	Atlanta	Memphis	Dallas	Los Angeles
Grade 1	n.a.	n.a.	n.a.	n.a.
2	n.a.	n.a.	n.a.	8.00/7.50
3	$7.00/6.50	$7.50/7.25	$7.50/7.00	7.25/6.75
4	6.50/5.75	6.50/6.25	6.50/6.25	6.50/6.25
5	5.75/5.25	5.75/5.50	6.00/5.50	— /6.00
6	5.25/4.25	5.00/4.75	5.25/5.00	5.00/4.25
7	4.25/3.50	4.25/4.00	4.75/4.00	n.a.

WASTE PAPER MARKET

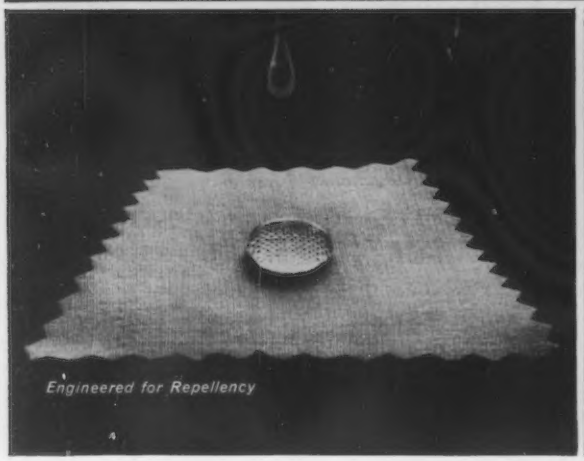
Mill Prices, f.o.b. Trucks Shipping Point — Includes Brokerage

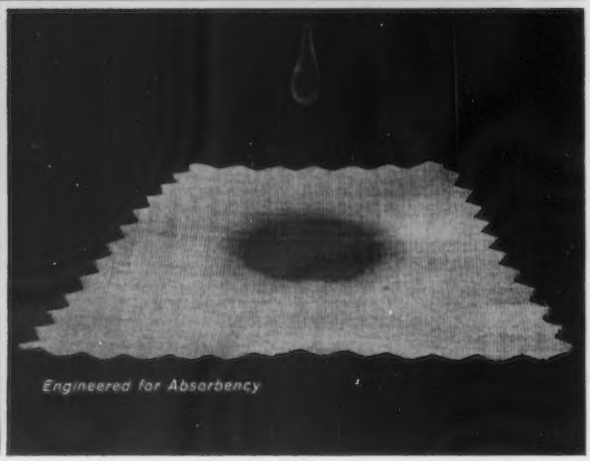
These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers and brokers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

	New York	Boston	Chicago	Los Angeles
	Jan. 9	Jan. 9	Jan.	Jan.
No. 1 Mixed Paper	$ 7.00/ 9.00	4.00/ 7.00	6.00/ —	12.00/ —
No. 1 News	12.00/ 13.00	11.00/ —	11.00/ —	12.00/ —
Overissue News (Lg. size)	11.00/ 13.00	9.00/ 11.00	16.00/ —	18.00/ —
Mill Wrappers	19.00/ 22.00	9.00/ 11.00	9.00/ —	13.00/ —
Old Corrugated Containers	19.00/ 20.00	17.50/ 18.00	18.00/ —	17.00/ —
Super Resorted Kraft Paper	35.00/ 40.00	— / —	28.00/ —	50.00/ —
New Double Kr. Ld. Corr. Cuts	27.50/ 30.00	30.00/ 32.50	30.00/ —	27.50/ —
(Semi-chem. medium)	45.00/ —	45.00/ —	42.50/ —	— / —
New 100% Kraft Corr. Cuts	40.00/ 42.50	— / —	52.50/ —	— / —
New Br. Kraft, Env. Cuts	65.00/ 70.00	65.00/ 70.00	47.50/ —	55.00/ —
New Br. Kr. Bag Waste Prntd.	50.00/ 55.00	50.00/ 60.00	47.50/ —	42.50/ —
New Br. Kr. Bag Waste Unprintd.	55.00/ 60.00	60.00/ 65.00	55.00/ —	50.00/ —
No. 1 Groundwood Shvs.	25.00/ 30.00	20.00/ 25.00	10.00/ —	30.00/ —
White Newsblanks	42.50/ 45.00	47.50/ 52.50	30.00/ —	55.00/ —
No. 1 Soft White Shvs.	55.00/ 60.00	55.00/ 60.00	50.00/ —	75.00/ —
Super Soft White Shvs.	45.00/ 75.00	70.00/ 80.00	60.00/ —	/ —
Hd. White Shvs.	75.00/ 80.00	80.00/ 90.00	75.00/ —	85.00/ —
Hd. White Env. Cuts	90.00/ 95.00	100.00/105.00	80.00/ —	103.00/ —
Col. Tab. Cards	40.00/ 42.50	40.00/ 42.50	35.00/ —	35.00/ —
Manila Tab. Cards	57.50/ 60.00	57.50/ 60.00	55.00/ —	60.00/ —
No. 1 Col. Ledger	32.50/ 35.00	30.00/ 35.00	35.00/ —	24.00/ —
White Ledger	45.00/ 50.00	42.00/ 47.00	45.00/ —	45.00/ —
Mixed Book & Mag.†	— / —	— / —	8.00/ —	— / —
No. 1 Books‡	15.00/ 17.50	18.00/ 22.00	22.50/ —	14.00/ —

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% of groundwood.

An example of Avisco Rayons in Industry





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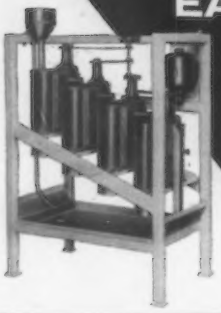

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Figures of the Week

PAPER PRODUCTION RATIO REPORT—American Paper & Pulp Assn. Figures
(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	Dec. 3	Dec. 10	Dec. 17	Dec. 24	Dec. 31
1960	93.4r	93.3	92.3	74.7r	53.8
	Dec. 5	Dec. 12	Dec. 19	Dec. 26	Jan. 2, '60
1959	95.9	97.0	97.1	62.5	80.6

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1960	96.5	97.7	98.1	96.9	97.6	96.1	81.2	91.7	89.1	94.8‡	91.9‡	78.6p	92.6p
1959	87.8	90.5	93.2	94.4	95.5	95.6	84.5	96.0	92.4	97.4	96.2	86.6	92.2

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1953	1954	1955	1956	1957	1958	1959	1960
Year to Date	92.3	91.6	96.2	97.9	90.4	87.0	92.2	92.6
Year Average	92.3	91.6	96.2	97.9	90.4	87.0	92.2	92.6

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available.

PAPERBOARD OPERATING RATIOS†—National Paperboard Assn. Figures

COMPARATIVE WEEKLY SUMMARIES

	Dec. 3	Dec. 10	Dec. 17	Dec. 24	Dec. 31
1960	79	91	87	86	39
	Dec. 5	Dec. 12	Dec. 19	Dec. 26	Dec. 31
1959	86	96	98	78	44

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1960	92	95	94	93	94	92	78	93	87	93	86	76p	89p
1959	89	94	95	94	96	96	83	97	92	96	94	80	92p

‡ Preliminary.
† *Per cents of operation based on "inch-hours" reported on a 6-day basis to the National Paperboard Association.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Assn. Figures

ITEM	WEEK ENDING Dec. 31, 1960	WEEK ENDING Dec. 24, 1960	CUMULATIVE TO DATE Jan. 1, 1960, to December 31, 1960
% Activity	39%	86%	89%
Total	163,709	285,977	15,883,902
Containerboard—Domestic Use.	74,834	138,631	8,176,975
Liner	42,292	89,086	5,482,610
Corrugating Material	29,430	44,598	2,438,560
Chip & Filler Board	3,112	4,947	255,805
Boxboard—Domestic Use	55,438	90,012	4,881,641
Folding	33,824	55,649	2,924,839
Set-Up	3,542	8,668	546,241
Special Food Board	18,072	25,695	1,410,561
Other Paperboard	33,437	57,334	2,825,286
Containerboard Type	13,207	27,708	1,358,708
Boxboard Type	20,230	29,626	1,466,578
Total Orders			
Received	231,673	254,950	
Unfilled End of Week	371,656	305,113	

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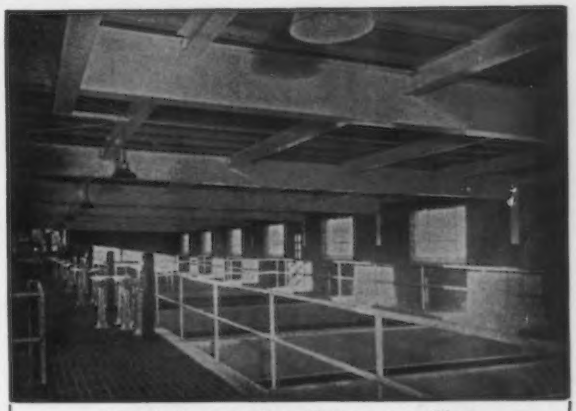

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J-30

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1—52" Moisel (Shear-Cut)
2—40" Beck Razor Blade Slitters
1—40" & 1—60" Kidder SH 40" rewind
1—40" Langston "Type A" (Shear-Cut)
1—24" 1—30", 1—36" & 1—40" Kidder S.L. & 1—36" SLN

MISCELLANEOUS MACHINES

1—166" Clark-Aiken Duplex Sheeter w/layboy
1—100" & 60" Hamblet w/layboy
1—90" M&W Sheeter, Overlapping Delivery and Layboy
1—84" Hamblet Duplex Heavy Board Sheeter
1—78" M&W Sheeter & Layboy
1—75" Hamblet Duplex—Erie Layboy—Overlapping Delivery
2—72" Hamblet Single Sheeters with Layboys
1—48" Mamco Layboy
1—55" CSH-Beck Sheeter
1—45" CCSH Back Sheeter
2—38" x 24" 4-Post Seybold Die Presses
5—Sheridans: 66" x 44", 60" x 30", 50" x 24", 44" x 22" & 36" x 18" and 1—Ford-Smith: 48" x 40" and 2—Hobbs 24" x 44"
Embossers 48", 38", 32" & 50" Heavy Duty Hudson Sharp Tinter-Embosser
1—40½" Hudson Sharp Toilet Interfold
1—Multipath Bag Machine—4 Color Holweg Printer
1—Honsel Millinery Bag Machine (Model S-50) Wide Range & 3 Color Printer
1—Strachan & Henshaw Bag Machine—2-color Aniline Printer
1—Model 4 Potdevin Sack Machine
1—30" Schultz Rewinder with Electronic Drive
1—60" H/S Household Wax-Roll Winder
Lawtomatic Towel & Tissue Wrappers
1—Hayssen 4-roll Toilet Wrapper
1—34" Waxer with 4-Ton Refrig. Unit
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2—Hudson-Sharp Gift Wrap Folders
1—40" International Paper Box Machine Co.'s Sheet-Fed Carton Waxer
1—46" Norwood Glassine Super Calender Stack

J-16

BARKING DRUM
1—12 ft. diameter x 45 ft. long

BEATERS
2—1500 lb. rag beaters, Valley Iron, bandless rolls, 54″ x 48″, cast iron tubs

CALENDER STACKS
1—3 roll 84″ face
1—4 roll 72″ face (Extra heavy duty)
1—5 roll 82″ face
1—5 roll 86″ face

CHIPPERS
1—96″ Murray 4 knife Chipper—anti-friction bearings
1—84″ 10 knife Carthage Chipper, Anti-friction bearings, with motor

COATER
1—42″ Chapman Extrusion Type Coater

CONSISTENCY REGULATOR
1—Poirier Stainless Steel, new condition

CRUSHER & HAMMERMILL
1—Murray Chip Crusher
1—Williams Hammermill
1—Jeffrey Shredder

CYLINDER MOLDS
5—36″ diameter x 75″ face, with couch rolls
1—36″ diameter x 82″ face
4—36″ diameter x 90″ face, with couch rolls
1—42″ diameter x 96″ face
2—42″ diameter x 106″ face
2—60″ diameter x 170″ face

DECKERS
2—IMPCO Deckers (Thickeners) 48″ x 120″ face, late type

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2—Waterbury Hydraulic Variable speed line shaft drives (from 40 to 100 H.P.)
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1—28″ diameter x 84″ face
1—28″ diameter x 48″ face
2—Calender Dryers, bronze, 30″ x 128″ with frames, gears & necessary rolls to make up the unit.
1—36″ diameter x 44″ face
5—36″ diameter x 76″ face
23—36″ diameter x 84″ face
14—48″ diameter x 48″ face with bearings
2—48″ diameter x 52″ face with frames, gears, bearings
2—48″ x 60″ face frames, gears & bearings
1—48″ x 96″ face
6—48″ diameter x 130″ face
1—60″ diameter x 92″ face, anti-friction bearings
1—73″ diameter x 66″ face, with bearings

EMBOSSING CALENDERS
1—43″ 3- roll Embossing Calender
1—48″ 2-roll Meadows Embossing Calender
1—51½″ 3-roll Smoothing Calender
1—57″ 3-roll Embossing Calender
1—62″ 2-roll Embosser
1—90″ 2-roll Smoothing Calender

FILTERS
1—Oliver Filter 8 ft. x 8 ft.
1—Dorr-Oliver Filter, 3 ft. dia. x 6 ft. face, stainless steel construction, with pump

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1—12 Plate "Packer"
4—14 Plate IMPCO, bronze vats

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1—#1 Jones High Speed Jordan
1—Jones Standard, new spare tackle, with 75 h.p. motor
1—Noble & Wood Monarch, Type D, anti-friction bearings
1—Noble & Wood Baby Jordan, anti-friction bearings, with 20 h.p. motor
1—#0 Miami, anti-friction bearings

KNIFE GRINDER
1—70″ Seybold

LABORATORY EQUIPMENT
1—4″ face x 36″ diameter Saveall
1—Washer for 5 lb. Beater
1—24″ Saveall, stainless steel
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1—12″ x 12″ Valley Sheet Dryer
1—18″ x 20″ Williams Sheet Dryer
1—15 lb. E. D. Jones Beater
1—Noble & Wood Cycle Beater with motor & stand
1—1½ lb. Valley Iron Works Beater, motor and stand
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1—Cady Micrometer
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1—84″ 3 bowl revolving reel
1—86″ 2 bowl reel
1—100″ Rice Barton 2 bowl reel, heavy duty
1—116″ Downingtown, 2 bowl, anti-friction bearings
1—123″ 3 bowl Revolving Reel
1—134″ 2 drum

REFINERS
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